

Alberta



species at risk

PROGRAM AND PROJECTS

2001-2002

Alberta

Species at Risk

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2001-2002

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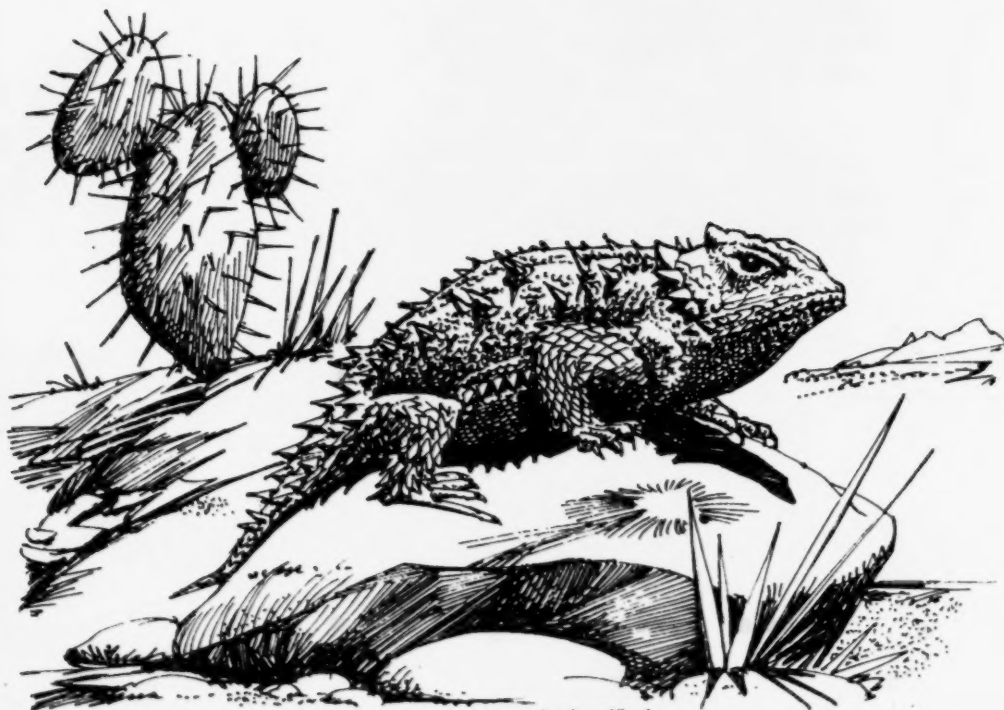
executive summary

Albertans are fortunate to share their province with a diverse variety of wild species. Populations of most species of plants and animals are healthy and secure. However, a small number of species are now imperilled because human activities have reduced or altered their habitat, and other species are considered to be sensitive and are of management concern. Albertans place a high value on natural ecosystems and the biological diversity they support, and the loss of species from the province is considered to be both socially and biologically unacceptable. Resource managers and Albertans from numerous sectors are therefore working hard to ensure that populations of species at risk are maintained for future generations.

The distribution of plants and animals does not follow political boundaries, and it is recognized that governments must work together to protect species at risk. To this end, the federal, provincial and territorial governments signed the *Accord for the Protection of Species at Risk in Canada* in 1996. This Accord committed each jurisdiction to increased cooperation and action to protect and manage species at risk.

Alberta has been actively managing species at risk for over 25 years, and was able to meet the new challenges outlined in the Accord. In 1997, the Alberta government amended the *Wildlife Act* to create the Endangered Species Conservation Committee (ESCC). This committee, consisting of 19 representatives from industry, conservation organizations and other stakeholders, was established to advise the Minister of Sustainable Resource Development on all issues relating to the identification, designation and management of species at risk in the province. The accomplishments of this committee, along with the provision of additional staff and resources by the Minister in 2000, helped crystallize the Alberta Species at Risk Program.

The program now encompasses several key elements, including the determination of status of individual species, the legislated protection for species at high risk of extirpation, management activities focused on population recovery, and programs to prevent more species from becoming "at risk". Significant progress has been made in all program areas during 2001-2002. Highlights include: coordination or funding of over 50 projects, which covered a diversity of topics and taxa; formation of four new recovery teams; completion and approval of the interprovincial *Canadian Sage Grouse Recovery Strategy*; preparation of two new recovery plans, for western blue flag and piping plover; and development and refinement of communication products such as the Species at Risk Report series and ESCC species information leaflets.



short-horned lizard

introduction

This report is the second annual summary of the Alberta Species at Risk Program. The program continued to expand in 2001-2002, its growth facilitated by a second year of enhanced funding. Progress was made in all areas of the program, from general status efforts to recovery and prevention. The accomplishments of 2001-2002 were made possible by dedicated staff, partner contributions and cooperative efforts with many stakeholders and nongovernmental, provincial and federal agencies.

Alberta's commitment to the principles embodied in the *Accord for the Protection of Species at Risk*, and to other provincial and federal programs and initiatives, continues to be strengthened through the development of the provincial Species at Risk Program. While inventory and monitoring projects comprised a large portion of the program in 2001-2002, significant advancements were also made in the area of recovery planning. The need for recovery planning and implementation of recovery actions continues to increase, and will remain a focal point of the program in the coming years.

This document is intended to provide an overview of the projects and recovery efforts undertaken as part of the Species at Risk Program in 2001-2002, as well as to highlight staff commitment and volunteer and stakeholder involvement. Fifty-one projects and five recovery teams were funded in whole or in part under the program in 2001-2002.

Program Framework

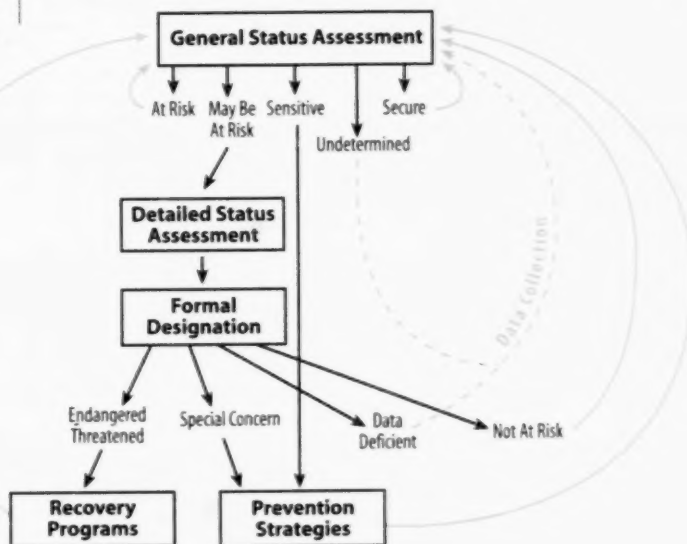
The Alberta Species at Risk Program is composed of five interrelated program areas:

- general status assessment of all wild species,
- detailed status assessment of species that may be at risk of extinction or extirpation,
- formal (legal) designation of species as *Endangered or Threatened*, or recommendation as *Special Concern*, *Data Deficient* or *Not At Risk*,
- development and implementation of recovery programs for *Endangered and Threatened* species, and
- development and implementation of strategies to prevent species from becoming at risk.

These components are integrated so that advancements in one area, for example general status determination, lead to development and evaluation of the other components. Details on the five steps follow, and are illustrated in the accompanying figure below.

1) General Status Assessment

This element is the common link for all species in the process. The general status of all wild species in Alberta, regardless of their designation, is evaluated every five years. This process acts as a coarse filter, identifying those species that require more focused attention, either for protection or accurate evaluation. Those species already designated as *Endangered or Threatened* under the *Wildlife Act* are given the general status of *At Risk*.



Preliminary status assessments were prepared in 2000 for 4735 plant, vertebrate, invertebrate and fungus species, expanding the scope of the general status assessment process. *The General Status of Alberta Wild Species 2000* (Alberta Sustainable Resource Development 2001) reports on butterflies, orchids, ferns and fish as well as birds, mammals, amphibians and reptiles, all of which were also assessed nationally in either 2000 or 2001.

2) Detailed Status Assessment

Detailed status reports, which provide a comprehensive and current summary of a species' status, are prepared for species listed as *May Be At Risk* at the general status level, as well as for some status *Undetermined* species. Using these reports and any additional pertinent information, an independent body of scientists, the Scientific Subcommittee (SSC) of the Endangered Species Conservation Committee (ESCC), makes detailed assessments of species at risk, using criteria developed by The World Conservation Union (IUCN). The SSC provides these results, as well as recommendations for conservation, to the ESCC. The SSC and the ESCC were created in 1998 under Alberta's *Wildlife Act*.

3) Formal Designation

The ESCC, a broad stakeholder committee including scientists, government and corporate land managers, resource-based land users and conservation organizations, evaluates the detailed status assessment and makes recommendations on legal designation, preparation of a recovery plan, and conservation actions that should be undertaken immediately. These recommendations and the SSC assessment are forwarded to the Minister of Sustainable Resource Development, who has the final responsibility for legally designating species as *Endangered* or *Threatened*, and initiating recovery and conservation measures. Legal designation as *Endangered* or *Threatened* under Alberta's *Wildlife Act* prohibits disturbance, killing or trafficking of these species, and provides immediate protection for nests and dens. For species that do not meet the criteria for *Endangered* or *Threatened*, new categories are being developed, including *Special Concern*, *Data Deficient* and *Not At Risk*.

4) Recovery Programs

Legally protected species then enter the formal recovery planning process. The focus of a recovery program is to improve the status of the species and ensure its long-term survival in the wild, with the ultimate goal of removing the species from the endangered species list. A recovery team, composed of a variety of stakeholders specific to the species and issues involved, is formed to develop and implement a recovery plan for the species. Following legal designation, recovery plans are required within one year for *Endangered*

species and within two years for *Threatened* species.

5) Prevention Strategies

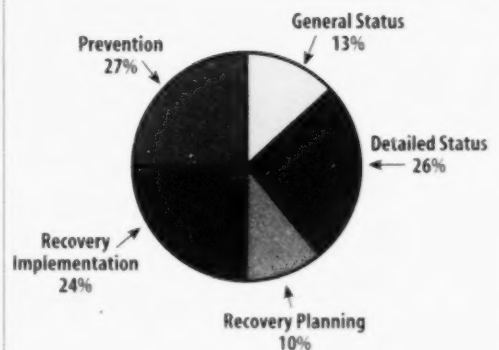
As it is generally much more efficient and cost-effective to protect species before they become endangered, any species designated as *Special Concern* following detailed status evaluation, or as *Sensitive* following general status evaluation, becomes eligible for special management actions designed to prevent the species from becoming at risk. Ecological management and conservation of biodiversity are considered fundamental aspects of program delivery.

Program and Project Priorities

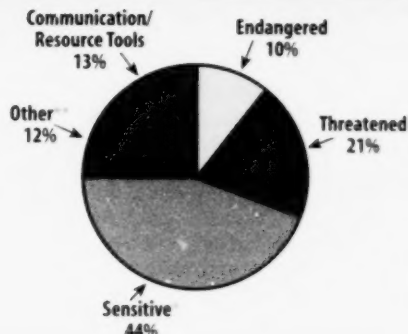
The 2001-2002 Species at Risk Program provincial budget of approximately \$2.1 million was allocated to salary and operations, data management and species at risk projects. All project proposals were critically reviewed by Species at Risk staff and ranked using a defined prioritization scheme. Recommendations from the ESCC were considered during the review process. Priority was determined using the following criteria: 1) the status of the target species (*Endangered* vs. *Threatened* vs. *Special Concern*/*May Be At Risk*/*Sensitive* vs. other); 2) existing commitments or urgency (e.g., recovery plan development, ministerial priority, ongoing project requiring completion, national listing); and 3) the scope and impact of the proposed project (e.g., provincial vs. local scope; offering direct vs. indirect conservation benefits).

Approximately \$865 000 was allocated directly to species at risk projects, communication initiatives and recovery teams. The accompanying three charts show the breakdown of project funds by program area, risk category and taxon. The communication/resource tool category appears as a stand-alone group in the taxon and risk category graphs.

Percentage of Project Funds Directed to Program Area



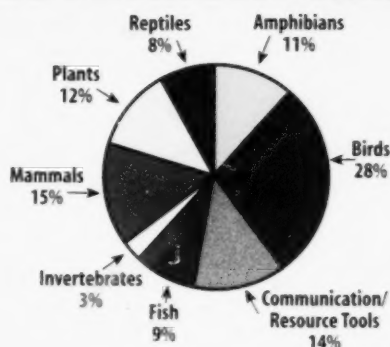
Percentage of Project Funds Directed to Risk Category



Includes special concern, may be at risk, sensitive, data deficient, undetermined

Includes secure and species with preliminary general status ranks

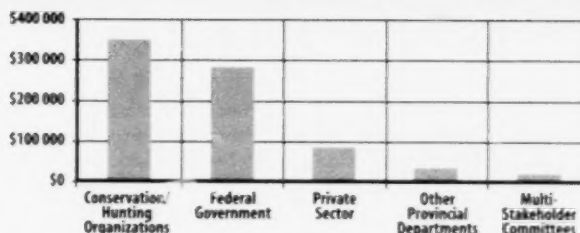
Percentage of Project Funds Directed to Taxon



Partner Funding

Funding from outside sources played a significant role in the successful delivery of projects coordinated by Fish and Wildlife Division staff or co-led with other organizations, such as the Alberta Conservation Association. Outside funding was received from a variety of sources including private sector, conservation or hunting-related agencies, other departments within the Alberta government, and the federal government. Approximately \$765 000, an almost 1:1 match with the Species at Risk Program allocation to projects, was received in partner contributions. Projects that received augmented funding covered a broad spectrum of initiatives ranging from communication to inventory/monitoring to stewardship and recovery programs. Substantial in-kind support from numerous organizations was also instrumental to the successful delivery of the program.

Partner Funding Contributed to 2001-2002 Species at Risk Projects*



*Only for projects led or co-led by the Fish and Wildlife Division

Significant Program Developments During 2001-2002

General status efforts in 2001-2002 included inventories of a number of nontraditional taxa, such as molluscs, butterflies and plants. In addition, the Species at Risk Program continued to support existing initiatives including the Alberta Amphibian Monitoring Program, the northern Alberta bat inventory, and the collection of owl pellets to determine distributions of select species of small mammals. At the national level, Alberta coordinated the development of Canada-wide general status ranks for butterflies, and participated in the development of national ranks for freshwater fish. The national ranks for both species groups were based on jurisdictional general status ranks submitted by the provinces and territories.

The 2000 preliminary general status evaluation of vascular plants resulted in a large number of species with a preliminary designation of *May Be At Risk*. As such, these species are potential candidates for preparation of a detailed status report; however, current population or trend information is not available for many of these species. It became clear that candidate species needed to be further stratified. One of the key tools developed by the SSC during the past year was a process for prioritizing *May Be At Risk* species for which additional data were needed. This process was developed for vascular plants, but can be applied to any taxon.

Inventory projects were also conducted for several species of management concern (e.g., long-billed curlew), as well as for some species that had been assessed nationally, but not provincially (e.g., mountain plover). The information collected from these projects will be used in the detailed status evaluation process. Ten detailed status reports were initiated in 2001-2002, and eight were printed (including a number initiated in previous years), bringing the total number of reports published in this series to 43 since 1997. The

reports initiated and printed in 2001-2002 covered species from a broad range of taxa, including invertebrates, amphibians, birds, fish, mammals and plants. This element of the program continues to be integral to the operation of the SSC and ESCC.

The ESCC completed evaluations of seven species potentially at risk in Alberta and forwarded its recommendations for these species to the Minister of Sustainable Resource Development (see table below). The committee also reviewed and provided comments on the proposed Wildlife Amendment Act. On the communications side, information leaflets were created for a number of the species assessed by the ESCC. The leaflets were designed for a wide audience, including ESCC members and their organizations, media and the general public. Creation of additional leaflets will continue in 2002-2003 with the intent of making them available on the Fish and Wildlife Division's Species at Risk website.

Species assessed by the Endangered Species Conservation Committee during 2001-2002

Species	Status at Time of Assessment (2001)	Status Recommendation
Trumpeter Swan (<i>Cygnus buccinator</i>)	Threatened	Threatened
Western Spiderwort (<i>Tradescantia occidentalis</i>)	Not Listed	Endangered
Whooping Crane (<i>Grus americana</i>)	Endangered	Endangered
Harlequin Duck (<i>Histrionicus histrionicus</i>)	Game Bird	Species of Special Concern
Ferruginous Hawk (<i>Buteo regalis</i>)	Threatened	Threatened
Bull Trout (<i>Salvelinus confluentus</i>)	Not Listed	Species of Special Concern
Grizzly Bear (<i>Ursus arctos</i>)	Big Game	Threatened

Substantial progress has been made in both recovery planning and recovery implementation in the province. The *Canadian Sage Grouse Recovery Strategy*, developed jointly by Alberta and Saskatchewan, was formally ratified by the Alberta government in September 2001.

Four provincial recovery teams were formed (western blue flag, burrowing owl, piping plover and peregrine falcon), and two recovery plans were completed (piping plover and western blue flag). Preliminary work began on the formation of three more recovery teams: woodland caribou, trumpeter swan and Ord's kangaroo rat. Recovery, conservation and research efforts continued for all of these species, concurrent with the preparation of recovery plans.

Stakeholder participation has been vital to the working success of the provincial recovery teams.

Although stakeholder representation varies from team to team, conservation groups, industry, land users and managers, and provincial and federal agencies are generally involved in these cooperative and consultative initiatives. For more information about Alberta recovery teams and planning efforts, see pages 77-82.

Prevention-related initiatives took several forms in 2001-2002. A number of monitoring and inventory programs focused on species designated as *Special Concern* or *Sensitive*, such as long-toed salamander, three boreal forest warblers, loggerhead shrike and long-billed curlew. Raising public awareness about the identity and needs of species at risk also played a key role in the prevention aspect of the program. In addition to the ESCC species information leaflets, several interpretive and signage projects were initiated this past year.

Provincial and National Program Integration

Alberta's approach to identifying and protecting species at risk is consistent with and parallels national efforts in this area. Alberta has taken a leadership role in the development and implementation of a national general status assessment system, and this initiative links directly to Alberta's general status assessment effort. A standard assessment protocol has been developed and adopted by all jurisdictions in Canada. This protocol will help consolidate the provincial and territorial status ranks of all wild species into national ranks at five-year intervals.

This consistency in approach continues at the detailed status assessment level. The SSC plays a role similar to that of the Committee on the Status of Endangered Species in Canada (COSEWIC). Both committees conduct biological assessments of potentially at risk species using criteria established by The World Conservation Union (IUCN). The ESCC represents a unique and progressive component of Alberta's assessment process. By involving stakeholders at this stage of the legal designation process, development of effective and viable management and recovery programs has been enhanced.

Integration of provincial and national recovery planning is essential, particularly for widely distributed species that face threats which are common across a number of jurisdictions. For example, woodland caribou recovery planning in Alberta is at the preliminary stage, but has been designed to complement and integrate with national efforts. Where Alberta is the lead or co-lead jurisdiction for an endangered or threatened species (e.g., greater sage-grouse, western blue flag), provincial recovery plans have been developed to satisfy both national and provincial requirements.

Alberta also participates on all national recovery teams for species at risk that occur in the province. National recovery strategies and action plans are prepared under the auspices of the Recovery of Nationally Endangered Wildlife (RENEW) program. The RENEW program was launched in 1988 and is currently being updated with an emphasis on

recovery actions. Alberta is leading the review of RENEW's Recovery Operations Manual.

Parallels between the provincial and national processes for identifying and recovering species at risk are illustrated below. At the time of printing of this report, Bill C-5, the proposed federal Species at Risk Act (SARA), was under Senate review.



Future Direction

Fish and Wildlife Division staff and partners have succeeded in building a progressive and responsive Species at Risk Program that includes strong stakeholder engagement. To maintain momentum and fulfil national and provincial commitments to all aspects of the program, from general status assessment to recovery planning, a stable funding platform is needed.

Another key challenge will be to better provide information about the program to other areas

within the department, as well as to other departments of the Alberta government. Opportunities for involvement should be highlighted, and participation in the identification and conservation of species at risk should be encouraged.

For more information about the Species at Risk Program, visit the website: <http://www3.gov.ab.ca/srd/fw/riskspecies/>.

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cooperating agencies

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Alberta Ecotrust
Alberta Energy Company
Alberta Natural Heritage Information
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Alberta North American Waterfowl
Management Plan
Alberta Pacific Forest Industries
Alberta Sport, Recreation, Parks and
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Program
Alberta Sustainable Resource
Development—Land and Forest Division
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Can-Am Geomatics
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Concordia University College of Alberta
Cows and Fish Program
Devonian Botanic Garden
Direct Energy
Ducks Unlimited Canada

East and West Ranching
Eastern Irrigation District
Endangered Species Recovery Fund
Environment Canada
Environmental Training Centre
Esso Imperial Oil (Manyberries, Alberta)
Federation of Alberta Naturalists
Fisheries and Oceans Canada
Freshwater Research
Government of Canada Habitat
Stewardship Program
Gulf Canada
Kananaskis Field Station
Lethbridge Naturalists Society
Medicine Hat Community Lottery Board
Medicine Hat Interpretive Program
Murray Chevrolet Oldsmobile Cadillac
(Medicine Hat, Alberta)
National Burrowing Owl Recovery Team
Natural Sciences and Engineering Research
Council
Northstar Energy
Notre Dame High School—Alberta
Technology Preparation Program
PanCanadian Resources
Paradise Canyon Resort
Parks Canada
Peace Parkland Naturalists
Petro-Canada
Police Outpost Provincial Park
Prairie Farm Rehabilitation Administration
ProMax Energy

Provincial Museum of Alberta
Runner's Soul
Shell Environmental Fund
Slave Lake Pulp Company
Special Areas Board
Suncor Energy
Sundance Forest Products
Sunpine Forest Products
Sustainable Forest Management Network
TD Friends of the Environment
Foundation
The Cadastral Group
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University of Agriculture in Szczecin,
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University of Alberta
University of Calgary
Wascana Energy
Waterton Lakes National Park
Weldwood of Canada
West Central Alberta Caribou Standing
Committee
Weyerhaeuser Canada
Wilburforce Foundation
Wildlife Conservation Society
Wood Buffalo National Park
World Wildlife Fund

*Significant cooperation was also received
from a number of local ranches and private landowners.*

amphibians

PROVINCIAL LONG-TOED SALAMANDER MONITORING

Project Supervisors: **Lisa Takats** (ACA), **Lisa Wilkinson**

To monitor long-toed salamanders to determine population trends in Alberta.

Background

In Canada, long-toed salamanders are found in isolated populations throughout British Columbia and western Alberta. Long-toed salamanders in Alberta are ranked *Sensitive* because of their vulnerability to habitat change and their limited distribution. Salamander populations should be monitored for a minimum of five years to determine population trends and identify necessary conservation and management activities.

Long-toed salamanders are difficult to study because they spend most of their lives in the forest, underground or under debris, and are primarily nocturnal. They travel to ponds in spring to breed, and juveniles usually leave the ponds in late summer. Consequently, survey methods focus on breeding ponds.

There are several key long-toed salamander populations in Alberta, primarily located in mountain passes and associated river valleys. Key populations include Waterton Lakes, Oldman River basin (Castle River and Crowsnest Pass), Kananaskis Valley and area (Spray Lakes, Bow Valley), Athabasca Valley and Peace River. The Oldman River basin area was surveyed in 2001—surveys were conducted at ponds where salamanders had previously been identified and at new sites (see page 16 for details). The other populations were included as part of an ongoing monitoring program in which known breeding ponds are visited throughout the season to confirm salamander presence and, in some locations, determine the number of salamanders returning to ponds. Surveys in the Waterton Lakes area have been conducted for five years. The Kananaskis and Athabasca sites have been monitored for four years and two years, respectively, as part of the Researching Amphibian Numbers in Alberta (RANA) program, which also gathers data on other amphibians. Public education, including school presentations and interpretive talks, is an important part of the RANA program.

Methods

In each area, known salamander ponds were surveyed to gather information on range and

distribution by counting eggs, larvae, juveniles and/or adults. Survey methods varied between monitoring sites, depending on resources and pond characteristics: egg counts were the primary survey method in both Kananaskis and Athabasca; minnow traps were used to count adults in Peace River; and larvae surveys were primarily conducted in Waterton. Pitfall traps and drift fences were used to trap salamanders at one pond in each of Kananaskis, Athabasca and Peace River. This provided an opportunity to gather data on length, mass, sex, reproductive condition, occurrence of deformities, and phenology, as well as providing a rough estimate of relative abundance. Efforts were made to survey new ponds for the presence of salamanders.

Results

Salamander presence was confirmed at each breeding area by the presence of eggs, larvae, and/or adult salamanders, but not all breeding ponds monitored in previous years contained salamanders in 2001. In most cases, salamanders were found in permanent, fishless ponds. A few new breeding ponds were discovered in the Athabasca and Kananaskis areas. In general, the populations seemed productive, but long-term data are required before it can be determined whether the populations are stable. One of the most important outcomes from this study was the development of a provincial long-toed salamander survey protocol, which will ensure that data are collected in a consistent way at all sites, helping to better understand population trends and, ultimately, the status of this species in Alberta.

Recommendations/Future Direction

Habitat alteration and destruction threaten the viability of these isolated populations, necessitating continued research and management. Monitoring should continue at sites for a minimum of five years. Sites that have been surveyed recently should be monitored on an annual basis if possible. Efforts should also be made to look for new ponds. Conservation measures should be implemented, such as Protective Notations (PNTs), and both private and public landowners should be informed about the importance of long-toed salamander habitat.

REGION:

Provincial (conducted in Northwest Boreal, Northern East Slopes, Bow, Prairie)

TARGET SPECIES:

Long-toed Salamander
(*Ambystoma macrodactylum*)

WILDLIFE ACT CATEGORY:

Non-game Animal
(ESCC Recommendation—Special Concern)

PROVINCIAL GENERAL STATUS:

Sensitive

COOPERATING AGENCIES

Alberta Conservation Association, Weldwood of Canada, Alberta Sport, Recreation, Parks and Wildlife Foundation, Kananaskis Field Station, Student Career Placement Program, Environmental Training Centre, University of Alberta

For more information contact:

Lisa Wilkinson (see page 7) and see Species at Risk Report No. 35, Protocol for monitoring long-toed salamander (*Ambystoma macrodactylum*) populations in Alberta, and Species at Risk Report No. 36, Long-toed salamander (*Ambystoma macrodactylum*) monitoring study in Alberta: summary report 1998-2001.

NORTHERN LEOPARD FROG—ALBERTA INVENTORY

Project Supervisors: **Kris Kendell** (ACA), **Steve Brechtel**

REGION:

Provincial (conducted in Prairie, Bow, Parkland, Northern East Slopes, Northwest Boreal, Northeast Boreal)

TARGET SPECIES:

Northern Leopard Frog (*Rana pipiens*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk

purpose

To determine the distribution, relative abundance and breeding success of the northern leopard frog in Alberta, using a standardized inventory protocol.

Background

The northern leopard frog was formerly widely distributed and locally abundant in the prairies, foothills and central parkland of Alberta. Abrupt and dramatic population declines were noted in the late 1970s and early 1980s over much of the leopard frog's range in western Canada.

The causes of population declines in Alberta are not fully understood. Possible threats to existing populations and factors contributing to leopard frog declines in Alberta include viral and bacterial infections, toxic substances (biocides) and introduced game fish. Threats to habitat include habitat loss and fragmentation, disturbance by livestock in riparian areas, and drought. Drought can lead to shallow water levels, resulting in overwinter mortality if water bodies freeze to the bottom or become anoxic.

Leopard frog inventory studies have been undertaken previously; however, these were usually restricted to specific study areas and regions of the province. Uncertainty about the validity and reliability of some of the data obtained through these studies added to the impetus to conduct a province-wide inventory, using a standardized protocol. A sampling protocol was drafted in April 2000 and focused on leopard frog behaviour, phenology and life history. The goal of the protocol was to increase the productivity and efficiency of leopard frog surveys by field personnel. The protocol has since been revised to include more detail on leopard frog ecology, and sampling techniques have been refined to address shortcomings identified during the course of the inventory in 2000 and 2001. Surveys were focused on sites where historical records of leopard frogs exist, as well as areas with more recent records.

Methods

Call surveys and area searches were planned in 2000; however, owing to time constraints, the area search technique was the primary sampling method used at known leopard frog sites. In 2001, the area search technique was used to survey leopard frogs. A list of specific sites to be surveyed was obtained from the Fish and Wildlife Division's Biodiversity/Species Observation Database (BSOD).

Results

Two hundred and sixty-nine leopard frog sites were visited during the inventory: 220 sites in 2000 and 49 sites in 2001. Twenty-eight additional sites were not investigated because of limited access or time constraints. Of the 269 sites visited, 49 were found to have leopard frogs in 2000 and five sites were found to have leopard frogs in 2001. Adults were observed at 41 sites, subadults at 26 sites, and young-of-the-year at 30 sites. Only a small percentage of the sites were found to have an appreciable number of adult and subadult frogs ($n > 10$) or young-of-the-year frogs ($n > 100$).

Of the 269 sites visited, approximately 36 sites were found to be completely dry and several others had been developed, which precluded surveys. Results from the inventory indicate that most leopard frogs occur along major river drainages, including the lower Red Deer River, the South Saskatchewan River, the lower Bow River and the Milk River. Leopard frogs were also observed in the Cypress Hills area, Willow Creek drainage (west of Stavely) and extreme northeast Alberta (east of Wood Buffalo National Park).

Data collected during the course of the leopard frog inventory were entered into BSOD.

Recommendations/Future Direction

Call surveys were found to be an inefficient method for detecting leopard frogs, because of irruptive breeding behaviour, relatively quiet calls, and sensitivity of individuals to environmental conditions that determine calling activity. Surveys in late summer coincided with the metamorphosis of young-of-the-year frogs, maximizing survey productivity. This also enabled reproductive success to be determined at sites where breeding occurred. Surveys in late summer and early fall were also preferred, as adults and other age classes begin to congregate at breeding ponds (late summer) and potential hibernation sites (early fall).

Sites occupied by leopard frogs in 2000 and 2001 should be investigated further to identify possible threats to aquatic and terrestrial habitat and the potential need for management action. These populations should also be studied in greater detail to obtain a better understanding of the relative abundance of leopard frogs in the province.

COOPERATING AGENCIES

Alberta Conservation Association, Alberta North American Waterfowl Management Plan, TD Friends of the Environment Foundation, Alberta Community Development—Parks and Protected Areas Division

For more information contact:

Steve Brechtel (see page 7) or **Kris Kendell** (Kris.Kendell@gov.ab.ca) and see Species at Risk Report No. 43, Survey protocol for the northern leopard frog, and Species at Risk Report No. 44, Alberta inventory for the northern leopard frog (2000-2001).

NORTHERN LEOPARD FROG REINTRODUCTION PROGRAM

Project Supervisors: **Kris Kendell** (ACA), **Steve Brechtel**

purpose

To reintroduce northern leopard frogs into currently vacant areas of their historical range.

Background

The northern leopard frog was formerly widely distributed and locally abundant in the prairies, foothills and central parkland in the southern half of the province, but abrupt and dramatic population declines were noted in the late 1970s and early 1980s. Highly localized remnant leopard frog breeding populations currently exist in Alberta. These remnant populations are vulnerable to disturbance and degradation of habitat, which could potentially lead to further extirpation of local populations.

The leopard frog has little ability to disperse naturally back into historical parts of its range. A reintroduction of this species into formerly occupied habitats would expand its currently restricted breeding distribution and reduce the threat from localized environmental changes.

In 1998, the Fish and Wildlife Division began to explore the feasibility of reintroducing leopard frogs into formerly occupied habitats in the upper Red Deer River and the North Saskatchewan River drainage basins. A pilot reintroduction project was initiated in 1999 at the Raven Brood Trout Station near Caroline, Alberta. The project involved captive rearing of leopard frogs from the egg stage of development to metamorphosed frog, in two outdoor ponds at the trout station. Additionally, a historical leopard frog site near Magrath in southern Alberta was investigated to determine if it would be a suitable site for future reintroduction efforts.

Methods

In 2001, leopard frog egg masses were collected from breeding sites located in southern Alberta and transported to the Raven

Brood Trout Station. The eggs were hatched under semi-controlled conditions and raised through metamorphosis. The captive-reared frogs were then marked to monitor their dispersal and identify the year in which they were released. Two release areas were used in 2001. The first area (Raven River release site) is located near the Raven Brood Trout Station. The second site (North Saskatchewan River release site) is located in the upper headwaters of the North Saskatchewan River near Rocky Mountain House and was selected as a pilot release site in 2001. Finally, a number of frogs were kept over the winter in the rearing ponds at the trout station.

In addition to the sites used in the captive-rearing program, 20 potential release sites for leopard frogs were investigated in the central parkland and upper headwaters of the Red Deer River and North Saskatchewan River. Each site was assessed for the presence of suitable breeding and summering habitat for leopard frogs. The presence of overwintering habitat was assessed at selected sites.

Preliminary work to determine suitable release sites in the Magrath area was initiated, and included landowner contact. Winter fieldwork at potential sites was conducted, and water flow rates and depth, as well as level of dissolved oxygen, were measured.

Results

Six leopard frog egg masses were collected from the identified breeding sites in southern Alberta, resulting in 21 036 hatchling tadpoles. In total, 2983 leopard frogs were successfully captive reared, of which 2833 were marked and released at designated release sites.

Specifically, 2083 frogs were released at the Raven River release site, 750 frogs were released at the North Saskatchewan River site, and 150 frogs were held in the rearing ponds over the winter.

The potential release site investigations resulted in at least two additional sites that possessed a number of important features that may support introduced leopard frogs. The most suitable site was a

REGION:

Provincial (conducted in Parkland)

TARGET SPECIES:

Northern Leopard Frog (*Rana pipiens*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk



Ducks Unlimited project located in the heart of the parkland near Pine Lake.

On 19 June 2001, three previously released leopard frogs were found within the Raven River study area—evidence of successful overwintering. Over the summer, at least 10 leopard frogs were observed or captured within the study area in 2001, of which six were marked in 2000. Individuals were also heard calling in the Raven River study area during late summer.

Suitable breeding and overwintering habitat was found at five potential release areas along Pothole Creek, near Magrath, and the interest and response from the involved landowner was extremely encouraging.

Recommendations/Future Direction

To ensure that a maximum number of leopard frogs is produced during the captive-rearing program, without compromising tadpole and frog health, it is recommended that each rearing pond contain approximately 6000 tadpoles at the onset of the captive-rearing season.

Surveys for previously released frogs at current and future release sites should be continued in order to monitor leopard frog dispersal, breeding and overall population health as well as release site characteristics. All surveys should be expanded from the immediate area of release to incorporate suitable habitat located along drainages and riparian corridors, with special attention to sites up to several kilometres downstream from the original release site.

Efforts to reintroduce the northern leopard frog in the Magrath area will continue in 2002, pending funding and appropriate environmental conditions.

COOPERATING AGENCIES

Alberta Conservation Association, TD Friends of the Environment Foundation, Alberta North American Waterfowl Management Plan

For more
information contact:

Steve Brechtel (see page 7) or **Kris Kendell** (Kris.Kendell@gov.ab.ca) and see Species at Risk Report No. 42, Northern leopard frog reintroduction—year 3 (2001).

LODGE CREEK NORTHERN LEOPARD FROG HABITAT ENHANCEMENT PROJECT

Project Supervisor: **Joel Nicholson**

purpose

To protect and enhance leopard frog habitat by improving cattle management through the use of an off-site watering system and other cattle management techniques.

Background

The northern leopard frog was formerly abundant in the prairies, foothills and central parkland areas of Alberta. This species underwent abrupt and dramatic population declines during the late 1970s and early 1980s. Highly localized remnant leopard frog breeding populations currently exist. These remnant populations are vulnerable to disturbance and degradation of wetland habitat, which could reduce breeding effectiveness and potentially lead to further local populations becoming extirpated.

The Lodge Creek drainage is an important riparian system in southeastern Alberta, located approximately 19 km south of the Cypress Hills. This drainage provides year-round habitat for a variety of species through the presence of relatively large sagebrush flats adjacent to the creek, as well as the aquatic habitat in the creek channel. Species that use the area include ungulates such as pronghorn and mule deer as well as at-risk species such as sage-grouse and leopard frogs. Permanent, spring-fed pools of water along the creek channel provide valuable habitat and refugia for amphibians. These pools are used as stock watering sites and are susceptible to damage by cattle.

Methods

Recently, East and West Ranching obtained a large grazing lease encompassing approximately 8 km of Lodge Creek. Poor distribution of livestock in the past has negatively affected the health of the site. The goal of the leaseholder is to improve the overall health of the riparian area associated with Lodge Creek, as well as the overall range condition on the grazing lease. In the long term, improved health and range conditions should have benefits for wildlife as well as for cattle. These improvements are being accomplished by implementing a number of management strategies that include:

- Manipulating stocking rates
- Implementing a deferred grazing rotation system
- Moving salting sites
- Herding
- Moving/developing watering sites

The last of these strategies to be actively employed was that of moving watering sites. The use of solar powered off-site watering systems in dugouts and along the creek serves to move cattle out of the sensitive riparian areas and associated sagebrush habitat. The leaseholder has implemented a management plan that includes use of a portable off-site watering system for the area. This extensive system consists of a large solar-powered pumping system with diesel backup, portable storage tanks, polyethylene hoses, a hose roller, and numerous portable watering troughs. The system is capable of moving water long distances, with the overall effect of improving the distribution of cattle by providing alternatives to watering directly from the creek, as well as providing water to places that formerly had no available water source.

In order to conduct a thorough evaluation of how improved stewardship of the land affects the health of the site, various monitoring initiatives were initiated. Baseline data on riparian health and range health were collected by the Cows and Fish Program and Public Lands Division, respectively. Amphibian surveys were also conducted on the creek and breeding bird data will be collected in the spring/summer of 2002.

Results

The off-site watering system is in place. Surveys to assess riparian health, range health and amphibian populations have been completed. Adult and juvenile leopard frogs were found in this section of Lodge Creek, indicating that a breeding population of frogs is present and should benefit from this project. Overall results of this management initiative will take a number of years to measure, as the short-grass prairie requires years to respond to management changes.

Recommendations/Future Direction

Continued long-term monitoring of riparian areas, uplands and wildlife is necessary to document improved health of the site.

REGION:
Prairie

TARGET SPECIES:
Northern Leopard Frog (*Rana pipiens*)

WILDLIFE ACT CATEGORY:
Threatened

PROVINCIAL GENERAL STATUS:
At Risk

COOPERATING AGENCIES

East and West Ranching,
Alberta Conservation
Association (Native Prairie
Stewardship Program),
Government of Canada
Habitat Stewardship Program,
Prairie Farm Rehabilitation
Administration, Alberta
Sustainable Resource
Development—Public Lands
Division, Cows and Fish
Program

For more
information contact:

Joel Nicholson (see page 7).

ALBERTA AMPHIBIAN MONITORING PROGRAM AND PILOT YEAR FOR ALBERTA AMPHIBIAN CALL SURVEYS

Project Supervisors: **Lisa Takats (ACA), Steve Brechtel**

REGION:

Provincial (conducted by Headquarters)

TARGET SPECIES:

Canadian Toad (*Bufo hemiophrys*), Columbia Spotted Frog (*Rana luteiventris*), Great Plains Toad (*Bufo cognatus*), Long-toed Salamander (*Ambystoma macrodactylum*), Northern Leopard Frog (*Rana pipiens*), Plains Spadefoot (*Spea bombifrons*), Western Toad (*Bufo boreas*), Boreal Chorus Frog (*Pseudacris maculata*), Tiger Salamander (*Ambystoma tigrinum*), Wood Frog (*Rana sylvatica*)

WILDLIFE ACT CATEGORY:

Threatened: Northern Leopard Frog

Non-game Animals: Canadian Toad, Columbia Spotted Frog, Great Plains Toad, Long-toed Salamander, Plains Spadefoot

Non-Licence Animals: Western Toad, Boreal Chorus Frog, Tiger Salamander, Wood Frog

(ESCC Recommendation—Special Concern: Long-toed Salamander)

(ESCC Recommendation—Data Deficient: Canadian Toad, Great Plains Toad)

PROVINCIAL GENERAL STATUS:

At Risk: Northern Leopard Frog

May Be At Risk: Canadian Toad, Great Plains Toad, Plains Spadefoot

Sensitive: Columbia Spotted Frog, Western Toad, Long-toed Salamander

Secure: Boreal Chorus Frog, Tiger Salamander, Wood Frog

purpose

To increase the number of volunteers participating in the Alberta Amphibian Monitoring Program and to determine the effectiveness of amphibian call surveys in determining amphibian distribution and abundance.

Background

Over the last 50 years, the populations of many species of amphibians and reptiles throughout the world have declined, and in some cases species have become extirpated or extinct. These declines have been attributed to a number of issues: habitat destruction, pollution (e.g., fertilizers, pesticides, herbicides, acid precipitation), ionizing radiation (UV-B), pathogens, exotic competitors, predators and mortality from vehicles while crossing roads. Concerns about amphibian declines, combined with a lack of information on many of the amphibians in the province, prompted the formation of the Alberta Amphibian Monitoring Program (AAMP) in the early 1990s. One component of the AAMP, volunteer monitoring, has been conducted in Alberta since 1992, and continues to be a successful method for collecting information on amphibian distribution and providing information to the public about the importance of amphibians and wetlands. However, participation in the northern part of the province has been limited, so efforts to encourage volunteer participation were focused on that region.

Several species have not been effectively targeted by the AAMP, and data gaps remain. The Endangered Species Conservation Committee (ESCC) has recommended two of these species, the Canadian toad and Great Plains toad, as *Data Deficient*. These recommendations

reflect a paucity of the information necessary to determine population trends and status.

Information on population trends for the plains spadefoot is also lacking. The effectiveness of call surveys to collect population size and trend data on these target species was investigated.

Methods

The volunteer monitoring program was advertised in newsletters, natural history journals, during talks at parks and to natural history groups, and by staff with the Researching Amphibian Numbers in Alberta (RANA) program. An identification manual and tape were forwarded to interested volunteers. Volunteers were asked to select and survey ponds by listening for amphibians calling in the spring, and by walking the edge of these wetlands in the spring, summer and fall. They were also encouraged to visit the same pond a number of times each season and in subsequent years. Data that volunteers collected included the date and time of the observation, a species list and how many were observed, breeding evidence, the location of the sighting, and the general habitat features surrounding the site.

Call surveys were conducted throughout Alberta, although most were focused south of the North Saskatchewan River and east of 114° longitude. The survey method followed that from the North American Amphibian Monitoring Program

(NAAMP), and involved listening for calling amphibians along a predetermined route

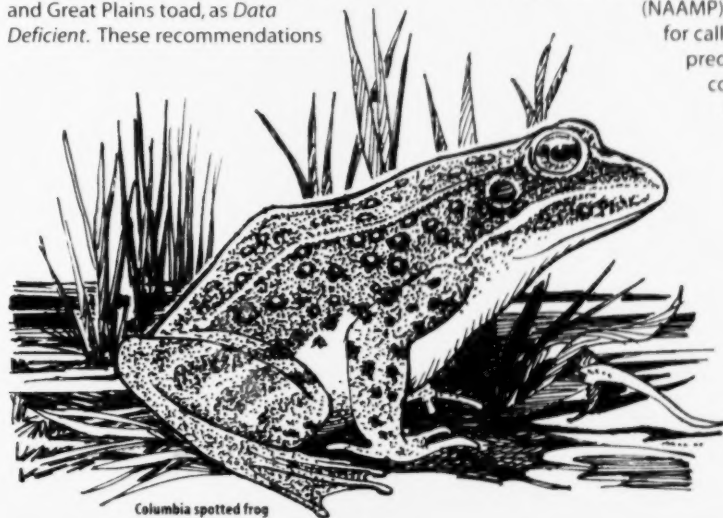
consisting of 10 stations spaced at 0.8 km

intervals. Transects

were also established at select RANA sites.

Individual point count stations were opportunistically set up in areas of suitable habitat.

Five minutes of silent listening was conducted at each station and all calling amphibians were recorded (species and



Columbia spotted frog

abundance). Surveys were conducted between a half hour after sunset and 0100. Environmental conditions (temperature, cloud cover, wind speed) were also recorded. Select surveys sites were revisited later in the summer to determine whether amphibian breeding had occurred.

Results

Over 9300 people were informed about amphibians and wetlands and their importance through the volunteer monitoring and RANA programs. Public information sessions were presented at three northern RANA locations to stimulate public involvement. Two hundred and seventy-four volunteers submitted amphibian data. Preliminary analysis of RANA data shows that there are no clear population trends for any amphibian species, which highlights the need for more long-term monitoring to determine natural fluctuations.

Three species of amphibians were recorded at point count stations (n = 22): boreal chorus frog, wood frog and plains spadefoot. Amphibians were heard at 12 (55%) of the point stations. Forty-one transects, containing a total of 497 stations, were surveyed (9 transects were visited twice). Amphibians were recorded at 190 stations (38.2%; 38 transects). Amphibians were not recorded on three transects. Species heard included boreal chorus frog, wood frog, Canadian toad, Great Plains toad, plains spadefoot, western toad and Columbia spotted frog. Amphibians were recorded at fewer stations in the prairies (53 of 169 stations) than at stations in forested areas (133 of 328 stations).

Data collected from volunteer monitoring and call surveys were entered into the Biodiversity/Species Observation Database (BSOD).

Recommendations/Future Direction

Volunteers continue to serve an important role in amphibian monitoring, and public education is invaluable for promoting the importance of wetlands. Recommendations include continuing to work with volunteers, providing educational resources, and analyzing distribution data on an annual basis, as well as examining the data for trends over time.

Call surveys were fairly successful overall, as amphibians were detected on most transects at one or more stations. However, call surveys along transects are not recommended for the prairies (because of the lack of water), and point counts at known ponds should be conducted instead. It was extremely dry in 2001, and most water bodies in the south dried up before young frogs could disperse. However, some of the northern survey sites were productive.

COOPERATING AGENCIES

Alberta Conservation Association, Alberta Student Temporary Employment Program, TD Friends of the Environment Foundation, Kananaskis Field Station, Beaverhill Bird Observatory

For more
information contact:

Steve Brechtel (see page 7) and see Species at Risk Report No. 53, Alberta amphibian call surveys, a pilot year, final report.

COLUMBIAN MOUNTAIN AMPHIBIAN SURVEYS, 2001

Project Supervisor: **Richard Quinlan**

REGION:

Prairie

TARGET SPECIES:

Long-toed Salamander
(*Ambystoma macrodactylum*),
Columbia Spotted Frog (*Rana
luteiventris*), Western Toad (*Bufo
boreas*)

WILDLIFE ACT CATEGORY:

Non-game Animals: Long-toed
Salamander, Columbia Spotted Frog

Non-licence Animal: Western Toad

(ESCC Recommendation—Special
Concern: Long-toed Salamander)

PROVINCIAL GENERAL STATUS:

Sensitive

COOPERATING AGENCIES

None

Richard Quinlan (see page 7) and
see Species at Risk Report No. 39,
Columbian mountain amphibian
surveys, 2001.

PURPOSE

To determine the distribution and abundance of three key species—long-toed salamander, Columbia spotted frog and western toad—in the Montane and Subalpine natural subregions of the Oldman, Crowsnest and Castle river drainages.

Background

Global declines in amphibian populations have increased the need for scientific data on the distribution, population sizes and trends of amphibian species. Amphibian populations are also potential indicators of ecosystem disturbance. The combination of these two factors has raised the profile of amphibian populations as an issue in wildlife and habitat management, particularly in relation to determining the effects of multiple-use management. Long-term amphibian population data are limited for southwestern Alberta, making it difficult to quantify changes in amphibian numbers and associated habitat.

In Alberta's Montane and Subalpine natural subregions, there are three amphibian species classified as *Sensitive*: the long-toed salamander, Columbia spotted frog and western toad (Alberta Sustainable Resource Development 2001). The long-toed salamander has been the subject of recent monitoring in Alberta, and it is considered vulnerable to destruction or alteration of terrestrial and breeding habitat. The Columbia spotted frog and western toad have not been extensively surveyed in the province. Limited distribution and potential declines in population (spotted frog), and lack of population trend information (both species) make them of interest from a management perspective. The purpose of this project was to gather more information on all three species at historical sites as well as to search for them in other suitable habitats.

Methods

Field surveys to determine the presence/absence of target species were conducted over a 3.5-month time period (15 April - 30 July) in 2001. Both small and large water bodies were surveyed. Surveys involved an observer walking around the complete perimeter of the smaller water bodies. Smaller water bodies were defined as breeding ponds that could be completely surveyed in 30 minutes and had a shoreline perimeter of less than 70 m. At larger ponds, three random 10-m transects were established along the periphery of the pond. Eggs within 2 m of the shore were counted individually or, if they were numerous, estimates were made. The use of polarized glasses helped to reduce the glare from reflected sunlight on the water. Surveys were conducted during daylight hours between 0800 and 1900.

A standard set of information was collected at each site, including location, description of water body size and type, water characteristics (e.g., turbidity, rate of flow), number and age of amphibians observed (eggs, larvae or adults) and a description of the aquatic and adjacent terrestrial vegetation.

Results

This project included a re-survey of 24 sites last examined in 1995 as well as the inventory of 45 new sites. Of the 24 original sites, long-toed salamander was observed at nine, Columbia spotted frog at six, western toad at four, and tiger salamander was documented at one site in 2001. There was a reduction in the number of sites with long-toed salamander from 1995 to 2001. Amphibians were confirmed at 30 of the 45 new sites. Long-toed salamander was observed at 17 of the new sites; 11 had Columbia spotted frog; nine had western toad; and one had tiger salamander. Twelve of the combined total of 69 sites supported more than one species of amphibian.

Threats to subalpine and montane amphibian populations were identified. They included fish stocking, loss of wetlands, degradation and loss of terrestrial habitat, and ATV use in breeding ponds.

Data collected during the surveys were entered into the Biodiversity/Species Observation Database (BSOD).

Recommendations/Future Direction

Project recommendations include the following:

- 1) Monitoring programs must be long-term to account for significant year-to-year natural variation in amphibian breeding population size. The 2001 survey should be repeated in five years.
- 2) A long-term monitoring site should be established in the Castle drainage to determine the status and trends of amphibian populations in this area (e.g., a Researching Amphibian Numbers in Alberta (RANA) site).
- 3) Buffers should be maintained around breeding ponds to reduce impacts such as loss and alteration of habitat from industrial and recreational activities.
- 4) Research on long-toed salamanders in fish-bearing versus non-fish-bearing ponds should be conducted in order to guide future fish and amphibian management decisions.



BURROWING OWL SURVEY AND MONITORING—BROOKS AREA, HANNA AREA

Project Supervisor: **Reg Russell**

PURPOSE

To determine the population status of the burrowing owl in the Brooks (Kininvie) and Hanna Areas.

Background

The burrowing owl occurs in Alberta during the summer months, and nests in the Mixedgrass and Dry Mixedgrass natural subregions in the southeastern part of the province. The species inhabits treeless plains with sparse vegetation, and requires abandoned ground squirrel or badger excavations for nests and shelter.

Population surveys suggest that the Alberta population has declined by approximately 30% over a 10-year period. The breeding population in Alberta is currently estimated to be fewer than 800 pairs, compared with estimates of over 1500 pairs in 1978, and approximately 1000 pairs in 1990.

Although the exact causes of the population decline are unknown, possible causes include climatic change, degradation and fragmentation of nesting habitat, use of pesticides, decreased availability of burrows as a result of reductions in burrowing mammal populations, and increased predator populations. Although suitable grassland habitat was rapidly converted to cultivation more than a decade ago, from 1976-1986, burrowing owls continue to decline. In addition, the species is an obligate neotropical migrant, and may be affected by mortality factors or habitat alteration on its migration and/or winter ranges.

Methods

The Biodiversity/Species Observation Database (BSOD) was used to identify prime areas for searching and monitoring. Known nesting sites in the Brooks area and Eastern Irrigation District were revisited and monitored, and other sites, including the Pollockville and Cessford area, were searched for new nests or nesting areas. Surveys were repeated in the K-blocks (160 quarter sections) near Brooks, and the H-blocks (109 quarter sections) near Hanna, using a standardized protocol for burrowing owl call/response.

Results

A summary of key findings follows:

K-blocks:

- All 160 quarter sections were searched.
- Eight nests were found within the blocks.
- An average of 5.3 young per nest was found at successful nests.
- The decline of the K-block population appears to have slowed in recent years, with the population having declined from 13.5 nests per 100 km² in 1997 to 9.7 per 100 km² in 1998, then declining further to 7.7 nests by 2001.

H-blocks:

- Only 34 of the 109 quarter sections were searched (access was denied on 75).
- No nests were found on the blocks searched.
- The H-block population remains at very low levels, having declined precipitously from 1991 (32.6 nests per 100 km²) to 1997 (2.8 nests per 100 km²).

All observations, including Global Positioning System (GPS) locations and associated relevant information, were entered into BSOD.

Recommendations/Future Direction

The surveys should be repeated in 2002. It is now essential that a closer relationship be cultivated with landholders in the Hanna area, so that access can be secured to the trend blocks.

More biological and geographic information on the trend blocks should be collected, and ArcView/BSOD GIS themes for K- and H-blocks should be developed (see page 19). Observations of Richardson's ground squirrel and other burrowing mammals should also be recorded and evaluated.

REGION:

Provincial (conducted in Bow)

TARGET SPECIES:

Burrowing Owl (*Athene cunicularia*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL CENTRAL STATUS:

At Risk

COOPERATING AGENCIES

National Burrowing Owl Recovery Team, Alberta Burrowing Owl Recovery Team, Eastern Irrigation District, Special Areas Board

For more information contact:

Arlen Todd (see page 7) and see Species at Risk Report No. 51, 2001 burrowing owl trend block survey and monitoring, Brooks and Hanna areas.

A ROADSIDE SURVEY TECHNIQUE FOR DETECTING BURROWING OWLS IN SOUTHEASTERN ALBERTA

Project Supervisor: Joel Nicholson

REGION:

Prairie

TARGET SPECIES:

Burrowing Owl (*Athene cunicularia*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk

Purpose

To test the suitability of a roadside survey technique to estimate burrowing owl distribution and abundance.

Background

The burrowing owl occurs in Alberta during the summer months, breeding throughout the Mixedgrass and Dry Mixedgrass natural subregions in the southeastern part of the province. This species may also occur to the north and west of these subregions into the Central Parkland Natural Subregion. The burrowing owl usually inhabits large expanses of native grassland, and requires abandoned ground squirrel or badger excavations for nests and shelter.

The burrowing owl population has declined severely over much of its range. Recent data analysis suggests that burrowing owls have declined in Canada over the past decade (at a rate of 22% per year). Although the exact causes of the population decline are unknown, possible limiting factors include a decreased availability of burrows due to reductions of burrowing mammal populations, and increased predator numbers. In addition, this species is a migrant, and may be affected by habitat alteration on its breeding, migration and wintering ranges.

A better understanding of burrowing owl populations, population trends and distribution in Alberta is needed. Intensive trend block monitoring for burrowing owls has occurred repeatedly in only two locations in the province (see page 17). Organized monitoring of this species has not taken place in the southeastern corner of Alberta for a number of years. The roadside survey technique has been deemed a more efficient use of time and manpower for discovering burrowing owl nest sites. Use of the roadside survey technique in 2001 enabled a broad search of areas that are not imminently in danger of industrial intrusion.

Methods

Call playback surveys were conducted along preselected roadway survey transects at approximately 1-km intervals, depending on terrain and field of view. Fieldwork started on 14 May and was completed on 28 June. Surveys were performed Monday to Friday, weather permitting.

The burrowing owl roadside survey was conducted from the bed of a pickup truck at each survey stop using the following 5-5-5-3 method. The first five minutes of the survey were used to scan the area, while allowing any disturbance caused by the vehicle to dissipate. During the second five-minute segment, the breeding call was broadcast in all directions, and again the area was scanned for the

presence of owls. The third five-minute segment was used to perform a final scan of the area. A breeding bird survey, during which all bird species observed or heard were recorded, was conducted in the final three-minute segment. A Global Positioning System (GPS) unit was used to measure the distance between stops.

Results

Call playback surveys were conducted at 165 survey stations. Two pairs of owls and their nest sites were detected from the roadway during the survey. One additional pair of owls was detected after a response to the call playback. Other wildlife species of interest were also noted, along with their GPS locations. Locations of the burrowing owls and other species of concern will be entered into the Biodiversity/Species Observation Database (BSOD) for future reference.

Productivity monitoring at the located nest sites revealed that one site was lost because of flooding from an intense thunderstorm, while five young were successfully produced at the other site.

Overall, very few owls were detected along the survey transects. This result may have occurred for various reasons. Burrowing owls can be difficult to detect because of their small size, use of burrows and low density. Additionally, weather conditions were extremely dry for the majority of the survey and the survey took place within the confines of a prolonged drought. The effect of this drought on burrowing owls is unknown. Wind conditions during the survey period were also unfavourable. Windy conditions caused suboptimal survey conditions and delays on numerous days of the survey.

Recommendations/Future Direction

Very few owls were observed in the survey areas during this project. Historical data indicate that a number of burrowing owl nest sites have been confirmed along these roadways in the past. On account of the low number of detections during this survey, the value of continuing this project should be investigated. To determine the reliability of this method, test areas could be sampled for burrowing owls using both the block survey technique and the roadside survey method, and results could then be compared. Additionally, survey routes could be shortened so that a broader area could be surveyed, which may allow for a more even sampling effort across the landscape.

COOPERATING AGENCIES

None

For more information contact:

Joel Nicholson (see page 7) and see Species at Risk Report No. 54, Utilization of a roadside survey technique to survey burrowing owl (*Athene cunicularia hypugaea*) in southeastern Alberta.

CHARACTERISTICS OF BURROWING OWL NEST SITES IN THE BROOKS AREA

Project Supervisor: **Reg Russell**

purpose

To determine the characteristics of successful nesting sites for burrowing owls in the Brooks area of Alberta.

Background

Population surveys suggest that the Alberta population of burrowing owls has declined by approximately 30% over a 10-year period. The breeding population in Alberta is currently estimated to be fewer than 800 pairs, compared with estimates of over 1500 pairs in 1978, and approximately 1000 pairs in 1990.

The burrowing owl population in the Brooks area has been studied intensively since 1993. Nests on established trend blocks have been monitored annually (except for 1996), to determine numbers of nesting pairs and nesting success (young successfully fledged from nest). Locations of successful nests have been permanently marked and recorded over the past three years.

Methods

Using GIS analyses and spatially relevant data sets, successful and unsuccessful (did not fledge young) nests were compared with respect to a number of attributes that were identifiable from aerial photo mosaics and existing information sources. The characteristics that were compared included soil types, grazing regimes, extent and type of native prairie vegetation, meteorological information, and proximity to riparian habitats, swales/wetlands, ecologically sensitive areas, gas and oil wells, roads and other linear disturbances and ferruginous hawk nesting platforms.

Results

A detailed GIS data set and map, which compare and contrast successful and unsuccessful nest sites in the Brooks trend block area, have been produced. Analyses to date have not indicated any clear, overriding trends.

Recommendations/Future Direction

Many factors may influence nesting success of burrowing owls. These factors vary in both time and space, and interact with each other in complex ways to affect the nesting success of burrowing owls. More detailed analyses are required to begin to reveal and understand these relationships.

REGION:

Provincial (conducted in Bow)

TARGET SPECIES:

Burrowing Owl (*Athene cunicularia*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk

COOPERATING AGENCIES

National Burrowing Owl Recovery Team, Alberta Burrowing Owl Recovery Team, Eastern Irrigation District, Avocet Environmental, Alberta Sustainable Resource Development—Resource Information Unit (Bow Region)

For more information contact:

Arlen Todd (see page 7).

EFFECTS OF PETROLEUM DEVELOPMENT ACTIVITIES ON BURROWING OWL PRODUCTIVITY

Project Supervisor: **Joel Nicholson**

REGION:

Prairie

TARGET SPECIES:

Burrowing Owl (*Athene cunicularia*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk

purpose

To determine if proximity of industrial construction activity to a nest burrow, or timing of the activity, affects burrowing owl productivity.

Background

Over the past number of years, there has been a rapid increase in the number of intensive oil and gas development programs in the grassland ecoregion of Canada. In Alberta, these programs can result in a shallow gas well being drilled on each quarter section within large portions of a township, whereas in Saskatchewan up to 16 wells per quarter section can be drilled. Recognizing that development activities could have an impact on sensitive species, the provincial governments of Saskatchewan and Alberta have developed guidelines to mitigate these effects. These guidelines were developed to address the impacts of the type, proximity and timing of disturbance events on a number of sensitive species. Passive activities (e.g., recreation, photography) and development activities (e.g., oil and gas well site construction) are recognized as potential sources of disturbance. The guidelines were established to err on the side of caution while attempts are made to refine the success of these guidelines.

The effect of industrial development activities on one endemic grassland species, the burrowing owl, has not been documented. This project focuses on two key issues: 1) does industrial construction activity near the nest burrow reduce burrowing owl productivity (i.e., an increase in the magnitude of the disturbance as distance to the nest decreases); and 2) does the timing of the activity influence burrowing owl productivity. Additionally, if an effect is discovered, the goal is to develop effective set-back distances and timing guidelines to mitigate the impacts of petroleum development activity on nesting burrowing owls.

This study began in 2000. In 2001, additional funding was obtained to monitor known nest sites where no development was scheduled, in order to increase the number of control sites. For the purposes of this study, disturbance was regarded as that associated with large-scale construction activities such as pipeline installation or reclamation and well-site drilling. All nests experienced some form of disturbance associated with petroleum activities such as surveying, vehicle traffic, and site visits by industry personnel.

Methods

Burrowing owl nests were located by playing taped recordings of the male's primary call during wildlife surveys conducted from late April to early June in 2000 and 2001 on sites slated for petroleum development. All nests found were initially included in the research program; however, there was no control over when or if the development would occur. In the event that a proposed disturbance did not occur as scheduled, or if the development happened after a nest was considered failed, those nests were included in the study as undisturbed controls.

Researchers were unable to monitor burrowing owl nests during the egg laying, incubation and hatching stages of nest development because of the underground nest location. Nests were therefore periodically checked to determine status until the first young were seen. Sites were then observed for 30 minutes every three to five days using a 60X telescope and/or 10X50 power binoculars. The observer remained in a vehicle at a distance that afforded the best view of the nest and associated roost sites, usually within 300 m to 500 m. This distance allows accurate identification of the adult male, female and juvenile owls while not disturbing their normal activity patterns.

For this study, productivity was considered to be the maximum number of young seen throughout the observation period. The age of juvenile owls was determined by comparing feather growth to existing photographs of burrowing owls raised in captivity. By backdating from these estimated ages, an approximation of the beginning of egg laying and hatching was determined.

The magnitude of disturbance effect was assessed using a linear regression with productivity as the dependent variable and distance to activity location as a continuous independent variable. To assess the effects of timing of development on productivity, an ANOVA was performed with productivity as the dependent variable and timing as the explanatory variable with four categories: 1) not disturbed, and disturbed during 2) nest establishment, 3) incubation, and 4) brood rearing. A Bonferroni test on all pairwise comparisons was performed to determine significant differences between categories.

Results

Seventy-six nests were included in the study: 24 in 2000 and 52 in 2001. Thirty-eight nests were considered undisturbed from the time of nest establishment until the young reached fledging age over the two-year study. The remaining nests experienced some level of primary industrial disturbance that varied from 3 m to 620 m away (mean $\pm$ SE; 174.7 m $\pm$ 21.8). The oil and gas activity may have occurred early to late in the nesting season, with the majority occurring during the incubation stage. Intensive monitoring of most nests began in mid-June when juvenile owls started to emerge from the nest burrow.

Burrowing owl productivity seemed to slightly increase as the proximity to the activity decreased; however, this relationship was not significant ($F_{1,36} = 1.486$, $p = 0.231$, $r^2 = 0.04$). The timing of activity had a significant overall effect on burrowing owl productivity ($F_{3,72} = 3.415$, $p = 0.02$). Pairwise comparisons indicated that those nests disturbed during the nest establishment stage had a significantly lower reproductive output (mean = 1.67 young, $n = 6$) than nests disturbed during the incubation (mean = 4.7 young, $n = 20$, $p = 0.05$) and brood rearing stages (mean = 5.4 young, $n = 12$, $p = 0.02$) but not compared to undisturbed nests (mean = 4.1 young, $n = 38$, $p = 0.14$). All other pairwise comparisons were not significantly different ($p \geq 0.63$).

Recommendations/Future Direction

The following recommendations are put forward to improve the current mitigation program for burrowing owls:

- 1) The timing restriction on industrial activities should be changed to discourage activities during the sensitive nest establishment stage (15 April – 15 May).
- 2) The setback restrictions should remain as they are, with a minimum of 500 m during the nest establishment phase strictly enforced.
- 3) Surveys for breeding owls should occur for all areas of native prairie where a proposed development is to occur.
- 4) Research on the cumulative impacts of industrial development on native prairie ecosystems should be initiated and/or supported.



burrowing owl

COOPERATING AGENCIES

Alberta Energy Company,
PanCanadian Resources,
Wascana Energy, Direct
Energy, BP AMOCO, Canadian
Natural Resources, Petro-
Canada, Gulf Canada, ProMax
Energy

For more
information contact:

Joel Nicholson (see page 7).

HABITAT-BASED POPULATION VIABILITY ANALYSES OF THE ALBERTA GREATER SAGE-GROUSE POPULATION

REGION:
Prairie

TARGET SPECIES:
Greater Sage-Grouse
(*Centrocercus urophasianus*)

WILDLIFE ACT CATEGORY:
Endangered

PROVINCIAL GENERAL STATUS:
At Risk

Project Supervisors: **Joel Nicholson, Richard Quinlan**
Project Researcher: **Cameron Aldridge** (University of Alberta)

purpose

To collect habitat, productivity and survival data for greater sage-grouse in Alberta, which will be used in a habitat-based population viability model.

Background

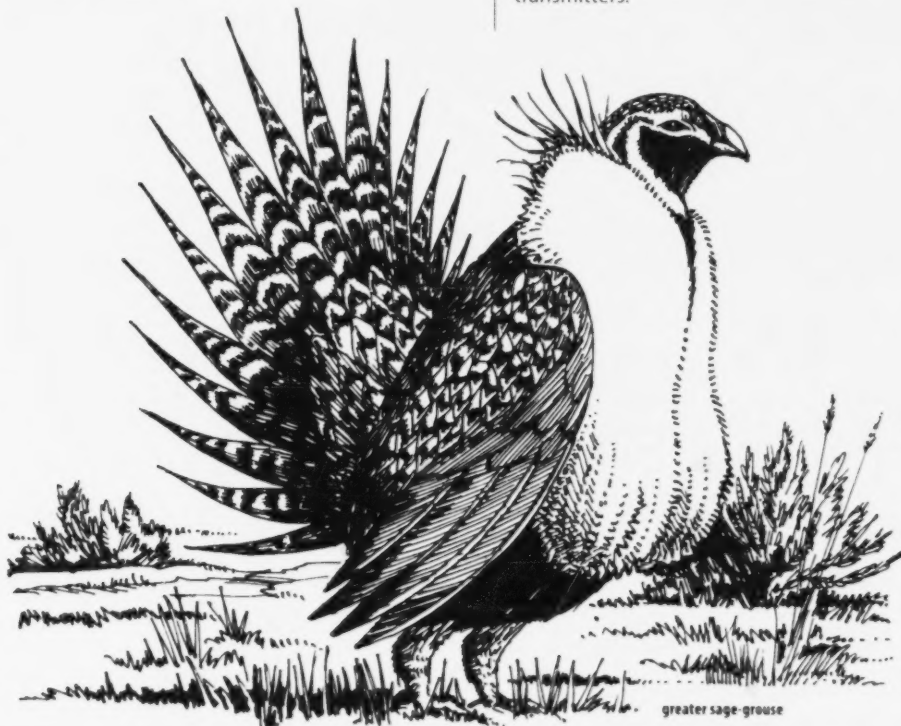
The population of greater sage-grouse in Alberta has declined by 66-92% over the last 30 years. Previous research in Alberta suggests that the population has declined as a result of poor recruitment. Low levels of recruitment appear to be linked to poor chick survival as a result of limited mesic sites important for brood-rearing habitat. To obtain a better understanding of the variables that might be related to the population decline, habitat use and selection were assessed at nest sites, brood-rearing locations and summer loafing sites. Insect samples were collected at all brood-rearing locations to assess the importance of insects in the diet of sage-grouse chicks. Winter habitat use by radio-collared female sage-grouse was assessed from January 2002 through to the breeding season. These data will be used to develop population and habitat models that will be integral to the development of a population viability model for the Alberta greater sage-grouse population.

Methods

The study area is approximately 4000 km² in size and is located in the southeastern corner of Alberta, south of the Cypress Hills and east to the Saskatchewan border. This area represents the core range of sage-grouse in Canada and is composed of semi-arid mixedgrass prairie, with an abundance of silver sage.

Lek counts were conducted from 26 March to 23 May 2001 at all previously known sage-grouse leks to obtain population estimates. Birds were subsequently trapped, and females were fitted with radio transmitters. Collared females were tracked and observed every other day during the nesting and brooding periods to determine nest fate. Those females surviving to winter were tracked during the winter of January to March, 2002.

Nest success was estimated as the percent of all nests in which at least one egg hatched. Chick survival was estimated from both brood flushes and from fitting some chicks with radio transmitters.



greater sage-grouse

Habitat and vegetation characteristics measured included: percent sagebrush canopy coverage; percent cover of grasses, forbs, nonpalatable forbs (to sage-grouse), other shrubs and bare ground/dead materials; amount of residual grass cover; litter build up; and dead sagebrush (stem) canopy cover. Pitfall traps were used to collect insect samples at brood locations.

Results

In 2001, lek counts made in conjunction with this research resulted in a maximum number of 127 males counted on seven active leks. Despite the drastic decrease in population numbers from the mid-1980s, the decrease appears to have been less severe over the last seven years, and the population may be in the increase phase of the 9-10 year cycle.

Thirty-six females (29 adults, 7 yearlings) and 16 males (14 adults, 2 yearlings) were captured during the 2001 breeding season. All females were outfitted with a radio transmitter. In total, 39 females were radio-collared—this included three females collared in previous years.

Reproductive data were gathered for 26 of the radio-collared females, two of which did not appear to initiate nesting activities. Twenty-five nests from 24 different radio-collared individuals (one female re-nested) and two nests from unmarked birds were located. Nest success was 37% (10/27 nests). Shortly after their first nesting attempt failed, three females were killed and six additional females disappeared. Thus, of those females whose first nesting attempt was unsuccessful, only 12.5% (1/8) re-nested. Sixteen collared females were still alive at the end of August 2001 and were targeted for winter tracking.

Overall clutch size was 7.5 eggs per nest (± 0.49 , $n = 21$), while average clutch size for successful nests was 8.6 eggs (± 0.18 , $n = 10$). Egg viability was 93%; 80 of 86 eggs hatched in nests that were considered successful.

Transmitters were placed on 14 chicks. Estimates of chick survival from the radio-tagged chicks (10%) yielded similar results to those from the brood flush counts (7.5%). Nine of the chicks that were radio-tagged were confirmed dead: three transmitters were found in coyote scat, one was found in fox or badger scat, four transmitters were located with bite marks in them, and one chick fell down an unused badger burrow and died.

Vegetation data were collected at 157 sage-grouse use sites: 27 nest sites, 43 brood-rearing locations from seven different broods, and 87 locations used by females without broods. Vegetation data were collected at an equal number of random locations for comparison. Insect availability data were also collected at each brood-rearing site and the corresponding random locations.

Recommendations/Future Direction

Field studies will be completed by the winter of 2003-2004. Insect/food selection and availability data and habitat data will be analyzed following completion of the fieldwork program. These data will be incorporated into resource selection models to develop a habitat-based population viability analysis.

Wildlife managers, Public Lands Division staff and landowners are currently developing cooperative management strategies, aimed at increasing the amount of high quality nesting and brood-rearing habitats.

COOPERATING AGENCIES

Alberta Conservation Association, Alberta Sport, Recreation, Parks and Wildlife Foundation, Cactus Communications (Medicine Hat, Alberta), Canadian Wildlife Foundation, Ducks Unlimited Canada (Alberta North American Waterfowl Management Plan), Endangered Species Recovery Fund, Esso Imperial Oil (Manyberries, Alberta), Murray Chevrolet Oldsmobile Cadillac (Medicine Hat, Alberta), Natural Sciences and Engineering Research Council, University of Alberta

For more
information contact:

Joel Nicholson (see page 7) and see
Species at Risk Report No. 56,
Developing a habitat-based
population viability model for
greater sage-grouse in southeastern
Alberta.

GREATER SAGE-GROUSE HABITAT INITIATIVE IN COOPERATION WITH THE NATIVE PRAIRIE STEWARDSHIP PROGRAM

Project Supervisors: Joel Nicholson, Paul Jones (ACA), Richard Quinlan

REGION:
Prairie

TARGET SPECIES:
Greater Sage-Grouse
(*Centrocercus urophasianus*) and
other prairie wildlife

WILDLIFE ACT CATEGORY:
Endangered

PROVINCIAL GENERAL STATUS:
At Risk

purpose

To conserve and enhance the native prairie ecosystem of southeastern Alberta for the benefit of sage-grouse and other prairie wildlife species.

Background

The native prairie ecosystem is the most threatened ecosystem in Alberta. Under the cumulative effects of urbanization, cultivation, livestock grazing, roads, and oil and gas development, the face of the native prairie has been altered dramatically. Concurrent with changes to the landscape, prairie wildlife has also been dramatically affected. Changing agricultural practices have resulted in a decline in grassland bird populations, with those remaining being concentrated on the native range. The native prairies of southeastern Alberta are also of significant international importance, acting as breeding grounds and nesting habitat for both resident and migratory birds.

The Alberta Conservation Association (ACA) Native Prairie Stewardship Program uses land stewardship, practised by ranchers and farmers, as a tool to protect and enhance native prairie habitat. Its goal is to educate ranchers on the principles of sustainable rangeland management and, through the development of a multi-use range management plan, assist them in making informed decisions regarding grazing practices that will benefit their cattle operation as well as native prairie habitat and wildlife. The program emphasizes an ecosystem approach and the importance of residual cover that will provide benefits for many wildlife species. Where appropriate, special considerations are given to individual species. A partnership between Fish and Wildlife Division (FWD), Public Lands Division (PLD) and the ACA has been developed to use the land stewardship approach described above to target sage-grouse habitat in the southeastern corner of Alberta.

In Alberta, sage-grouse are at the northern limit of their distribution, within the sagebrush range of the mixedgrass prairie. Sagebrush, in particular silver sage, provides most of the diet of adult birds. The greater sage-grouse population in Alberta has declined by 66-92% over the last 30 years. Previous research in Alberta suggests that the population has declined as a result of poor recruitment. Low levels of recruitment appear to be linked to poor chick survival as a result of poor quality brood-rearing habitat.

Although grazing management has been the principal focus of recovery efforts, local initiatives are now also focusing on cumulative effects and their potential impact on sage-grouse habitat. Investigations are underway into the effects of reduced surface water flow on sagebrush communities, impacts of recreationalists and oil and gas development, and habitat connectivity. Both PLD and FWD have identified mapping of important sagebrush landscapes as a high priority. Mapping of sagebrush habitat will allow priority areas to be identified and management efforts will be targeted accordingly. Analysis of landscape-level habitat use by sage-grouse will also be possible.

To assess work undertaken by the cooperative program, a partnership with the University of Alberta has been developed. This partnership will provide additional research resources over and above current staff time spent on project assessments and evaluation. Research work will serve as an evaluation of any grazing system changes and range improvements that are made to enhance sage-grouse habitat. Evaluation of changes to a ranch's grazing system and the subsequent effect on prairie wildlife will be a key part of a successful and evolving program. Long-term evaluation of the project will focus on sage-grouse response to changes in the habitat as a result of altered grazing practices and range improvements. Severe drought conditions in 2001 have postponed much of the grazing-related work, because an accurate evaluation of the landscape was not possible.

Additional work is underway to form a local recovery action group for sage-grouse. This group will consist of local stakeholders and agencies, and will drive all future sage-grouse recovery actions in Alberta. Successful formation and operation of this committee will be key to the success of sage-grouse recovery.

Methods

Sagebrush mapping was conducted using a specialized air photo interpretation methodology. Air photos and licence databases were used to analyze water developments in sage-grouse range. The effect of water

management on sagebrush communities was also analyzed using this information. The PLD has undertaken an analysis of grazing history in southeastern Alberta, and has initiated investigations into silver sagebrush ecology. Additionally, PLD staff have been contacting ranchers regarding sage-grouse habitat requirements and grazing management. Preliminary investigations into habitat connections with core sage-grouse populations in the United States have also begun through the use of satellite imagery.

Results

Sagebrush density and distribution mapping has been completed for the entire range of sage-grouse in Alberta (42 townships). An analysis of water management and its effects on the sagebrush community has been initiated, with completion anticipated in 2002-2003. Significant information has now been compiled on the grazing history in southeastern Alberta and how it relates to sage-grouse. This information will be used to help land and resource managers develop management strategies for sage-grouse in cooperation with local landowners and grazing leaseholders.

Recommendations/Future Direction

Project recommendations include the following:

- 1) Continued investigations into cumulative effects on the landscape, silver sagebrush and prairie wildlife.
- 2) Implementation of cooperative management strategies in cooperation with PLD, ACA, local ranchers and the Sage Grouse Recovery Team.
- 3) Long-term evaluation of management activities.

COOPERATING AGENCIES

Alberta Conservation Association, Government of Canada Habitat Stewardship Program, Alberta Sustainable Resource Development—Public Lands Division, local ranchers, University of Alberta

For more
information contact:

Joel Nicholson (see page 7) or Dale
Eslinger (Dale.Eslinger@gov.ab.ca).

LOGGERHEAD SHRIKE INVENTORY AND STATUS IN THE SOUTHERN PARKLAND, 2000-2001

Project Supervisor: **Dave Prescott**

REGION:
Provincial (conducted in Parkland)

TARGET SPECIES:
Loggerhead Shrike (*Lanius
ludovicianus*)

WILDLIFE ACT CATEGORY:
Non-game Animal
(ESCC Recommendation: Special
Concern)

PROVINCIAL GENERAL STATUS:
Sensitive

purpose

To determine the status and breeding locations of loggerhead shrikes in an area of the Parkland Region where populations are too low to be effectively monitored by generalized bird surveys.

Background

Populations of the loggerhead shrike have declined markedly in many areas of North America over the past few decades. Across Canada, they decreased at a rate of nearly 10% per year from 1966 to 2000. Once a common resident of the Central Parkland Natural Subregion in Alberta, the species is now absent from much of this area. In central areas of the province, populations are now so low and sparsely distributed that bird monitoring techniques used in other areas of the province (roadside inventories, block surveys and breeding bird surveys) are no longer effective. Alternative methods are therefore required to help define population status and identify key breeding locations.

Methods

In 2000 and 2001, intensive searches for loggerhead shrikes were conducted. The 2000 survey was conducted in a 30-km wide band along the southern edge of the Central Parkland Natural Subregion, from Rumsey (51°50'N; 112°55'W) to Provost (52°20'N; 110°10'W). In 2001, sites where shrikes were previously located were re-sampled, and searches were extended northward to Highway 53 (52°30'N), Highway 603 (52°29'N) and to the southern edge of Canadian Forces Base Wainwright (52°35'N).

Sites were surveyed by a single individual between 27 June and 13 July 2000, and between 19 and 30 June 2001. Surveys were conducted during daylight hours (0800 to 2000) and generally took place on sunny, warm days. Transects were driven at 40-70 km/hr and potential loggerhead shrike habitats (shelterbelts, wooded and shrubby areas) were identified from the road. Areas of potential shrike habitat were examined more closely by searching for shrikes with binoculars and/or a 60X spotting scope. Once a shrike was spotted, a search of the location was often performed to locate the nest and young. If a nest was found, notes were taken on clutch or brood size and approximate age of the young. Habitat types (pasture, farmland, wetland, vegetation) and the number of adults were recorded. Shrike locations were recorded with a Global Positioning System (GPS) unit.

During the 2000 survey, shrike alarm calls were recorded from a single site and played at several

sites to locate birds during the hottest part of the day (1200 to 1400). During this time, birds remain hidden in shady areas to avoid the heat. The tape of alarm calls was played for approximately three minutes, loud enough to be heard throughout the immediate vicinity. The call playback was played during periods of low wind, as wind can distort the sound. For the 2001 survey, the alarm calls were played at all areas considered to be potential shrike habitat. Each playback was carried out for one minute or until a shrike was observed, at which point nest searches were conducted for a maximum of 45 minutes.

Results

In 2000, 1404 km of road were surveyed during 71 person-hours of field effort. Approximately 175 survey stops were made, with call playbacks being made at approximately 50 of the stops. In 2001, 754 km of roads surveyed in 2000 were repeated in addition to 2657 km of new coverage, for a total survey distance of 3411 km. The 2001 survey was conducted during 147 person-hours of field effort. Approximately 250 survey stops were made in 2001, with call playbacks being used at approximately 220 of these sites.

The 2000 survey located eight adult pairs, 10 single adults, 11 fledglings, three nests and four nestlings (single nest) at 18 sites for a total of 41 birds. In 2001, 28 adult pairs, 25 single adults, 40 nests and 144 nestlings (30 nests) were found at 62 sites for a total of 225 birds. No fledglings were found in 2001, as a result of the earlier timing of the survey.

During both surveys, loggerhead shrikes were generally found east of 112°30'W; only one observation occurred west of this line. The majority of the observations occurred north of 52°N. The data identified two concentrations of loggerhead shrikes: one centred around Provost and the other near Sullivan Lake. Other sightings appeared to be more random in their distribution across the eastern Parkland Region.

Recommendations/Future Direction

A report summarizing the results of both surveys and recommending a standardized survey protocol has been completed. Refinement of call playback techniques will be the focus for 2002 as preparations are made for the 2003 prairie-wide loggerhead shrike survey.

COOPERATING AGENCIES

None

For more
information contact:

Dave Prescott (see page 7) and see
Species at Risk Report No. 46, Survey
of the loggerhead shrike in the
southern aspen parkland region,
2000-2001.

PROVINCIAL INVENTORY OF LONG-BILLED CURLEW

Project Supervisor: **Richard Quinlan**

purpose

To estimate the population of long-billed curlews and determine habitat preferences in Alberta.

Background

The long-billed curlew is the largest member of the sandpiper family in North America and, although it is one of the grasslands' most attention-grabbing shorebirds, surprisingly little is known about it. The long-billed curlew inhabits large tracts of grassland habitats, and is not known to use extensively cultivated areas.

Historically, curlew populations declined across North America as a result of over-hunting and habitat loss. Before the provincial inventory, little was known of population size and trends of long-billed curlew in Alberta, although the population was thought to be relatively small. Examination of Breeding Bird Survey (BBS) data suggested that curlew populations in Alberta were in decline, although this trend was not statistically significant.

To better understand the status of the long-billed curlew in Alberta, the Endangered Species Conservation Committee (ESCC) recommended that an inventory program for the species be established. A survey protocol was designed during 2000-2001 and implemented during the 2001 spring and summer field seasons.

Methods

A random stratified sampling method was employed within the Grassland Natural Region. Townships in this area were classified into three strata based on the percentage of native prairie within each township: 0-5% native prairie (stratum 1), 6-50% native prairie (stratum 2), and 51-100% native prairie (stratum 3). Sample units were 32 km long and 0.8 km wide and most were centred along minor roads. Along each 32 km route, 40 stops were established, 800 m apart.

Surveys were started one half-hour before sunrise and took between four and six hours to complete. At each stop the observer recorded all curlews seen and heard during a five-minute period. Observations of six other prairie bird species were also collected: upland sandpiper, ferruginous hawk, Sprague's pipit, burrowing owl, short-eared owl and loggerhead shrike.

Results

In total, 110 sample units were surveyed for curlews between 30 April and 8 June 2001. Approximately equal numbers of sample units were surveyed in each stratum, and 543 individual long-billed curlews were observed. From these surveys, a population estimate was derived: 11 942 curlew males (95% confidence interval of 9560-14 323) or, assuming an

equal sex ratio, 23 884 individual curlews (95% confidence interval of 19 122-28 646). As the Central Parkland Natural Subregion was not surveyed, and there are records of curlews nesting in that area in low numbers, the total Alberta population would be slightly higher than that calculated in this study.

A positive relationship between long-billed curlews and native grassland was found: more curlews were found in townships with the highest levels of grassland (stratum 3). Across all sample units, the number of curlews was positively correlated with the amount of native grassland in the sample unit. Finally, where native grassland was abundant, curlews preferentially selected the native grassland over cultivated fields and tame pasture. However, curlews were also found to occur in areas with little or no native grassland.

In conjunction with the curlew surveys, rough but potentially useful population estimates were derived for upland sandpiper (1194 ± 455 , precision of 38%) and Sprague's pipit ($11\,428 \pm 4683$, precision of 41%).

Recommendations/Future Direction

The results of the 2001 inventory suggest that there is a relatively healthy long-billed curlew population in Alberta that is larger than has been estimated in the past. However, the 2001 inventory is simply a snapshot of the current curlew population and gives no indication of trends. Grassland birds are known to experience large fluctuations in population in relation to weather conditions and the resulting habitat changes across their range. It is unknown how variable curlew populations are from year to year.

A proportion of the sample units should be surveyed again in 2002 (i.e., at least 10 routes per stratum) to gain a better understanding of year-to-year variation in the size of the long-billed curlew population in Alberta. This subsampling should then be continued at regular intervals in order to monitor trends in the population across the curlew's entire range in Alberta.

Curlews were not expected to use intensively cultivated areas. However, this study suggests that they are present in cultivated areas during the breeding season, occasionally in quite high numbers. Overall, 54% of the investigated population was found in the two strata representing 0-50% native grassland. It would be valuable to investigate curlew use of intensively cultivated areas and determine their breeding success and the effects of agricultural practices.

REGION:

Provincial (conducted in Prairie)

TARGET SPECIES:

Long-billed Curlew (*Numenius americanus*)

WILDLIFE ACT CATEGORY:

Non-game Animal
(ESCC Recommendation: Special Concern)

PROVINCIAL GENERAL STATUS:

May Be At Risk

COOPERATING AGENCIES

Alberta Conservation Association, ProMax Energy

For more information contact:

Richard Quinlan (see page 7) and see Species at Risk Report No. 25, Population estimate and habitat associations of the long-billed curlew (*Numenius americanus*) in Alberta.

MOUNTAIN PLOVER HABITAT AND POPULATION SURVEYS IN ALBERTA, 2001

Project Supervisors: **Richard Quinlan, Joel Nicholson**

REGION:

Prairie

TARGET SPECIES:

Mountain Plover (*Charadrius montanus*)

WILDLIFE ACT CATEGORY:

Non-game Animal

PROVINCIAL GENERAL STATUS:

Sensitive

purpose

To survey known and prospective nesting habitats for mountain plover in southeastern Alberta and to assess habitat potential and suitability.

Background

The mountain plover occurs in the southeastern corner of Alberta, at the northern periphery of its breeding range. Within the province, the species is designated as *Sensitive* at the general status level, and nationally the mountain plover is listed as *Endangered* by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2001). To gain a clearer understanding of mountain plover occurrence and population size in Alberta, surveys were initiated during the spring and summer of 2001.

Habitat and population surveys were conducted at the Onefour Research Substation and adjacent lands. This study complemented similar mountain plover surveys being carried out in the Grasslands National Park area of Saskatchewan (funded by Parks Canada) and in the remainder of the species' range in southeastern Alberta and southwestern Saskatchewan (funded by Environment Canada). The work funded by Environment Canada also included an aerial habitat survey of the Canadian range of the mountain plover. Together, these projects represent the first effort to sample the entire range of the species in Canada.

Methods

An aerial survey was conducted on 23 May 2001 to identify prospective areas of suitable nesting habitat and sites for ground surveys. The aerial survey was conducted using a fixed-wing aircraft, flying at an average height of approximately 150 m. The survey route began over previous breeding habitat, in order to familiarize surveyors with the aerial appearance of documented breeding habitats, and with habitats of high suitability that had been identified in preliminary ground surveys in late April.

Ground surveys were carried out from late April to mid-July at sites selected during the aerial survey, additional sites identified during the ground surveys, sites identified in previous years' surveys, and in the vicinity of sightings made by other observers in 2001. Detailed surveys were conducted at sites that appeared to have the highest suitability for nesting mountain plovers in 2001. Surveys at these sites involved walking a grid pattern to ensure comprehensive auditory and visual coverage, and were carried out at least twice at each site.

Reconnaissance surveys were conducted at sites considered to have lower suitability for nesting mountain plovers in 2001. These included habitats that appeared to be 1) marginally suitable but which could potentially include localized areas of suitable nesting habitat, or 2) currently unsuitable but potentially suitable with appropriate range management. Reconnaissance surveys involved slowly driving roads and back roads, stopping at regular intervals to scan habitats with binoculars, or walking through larger, roadless areas and scanning with binoculars.

From the detailed and reconnaissance-level ground surveys, a final assessment was made of habitat suitability and potential for each site. Suitability was assessed on the basis of prevailing habitat quality, whereas potential was assessed based on projected habitat quality given appropriate management practices (e.g., more intensive grazing or controlled burning) in the future.

Results

The 2001 survey provided an update on the status of mountain plover in Alberta and represented the most detailed population and habitat survey conducted to date. Results support previous assessments that population levels are very low and individual populations may not be present every year. The suitability of most habitats with high potential appears to be limited by existing grazing prescriptions.

Nineteen sites were assessed as having potential for nesting habitat. These included 17 sites with high potential and two with limited potential. In total, eight of the 17 high potential sites were assessed as having high suitability in 2001, while nine were of limited suitability.

In the 2001 survey, there appeared to be a greater area of heavily grazed grassland than observed in recent decades. However, this was at least partly related to ongoing severe drought conditions in the region. Two extremely dry growing seasons (2000 and 2001), combined with four winters with little or no snow cover, resulted in significant declines in plant vigour and litter. Some portions of southeastern Alberta showed little or no green growth throughout the survey period.

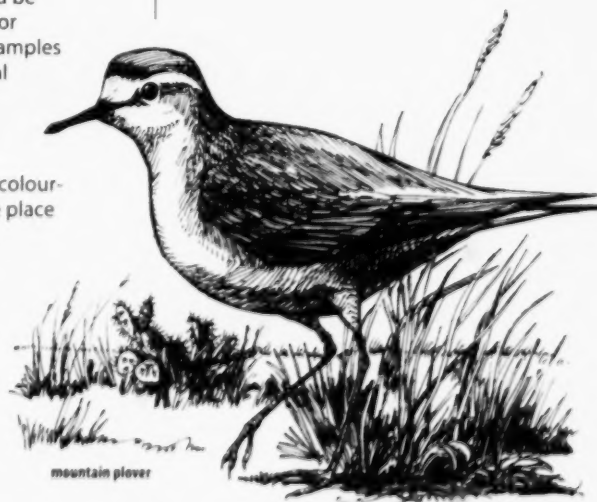
Because of the effects of the drought, grassland that had received light to moderate grazing often had the appearance of more heavily grazed range. In addition, because of the general scarcity of adequate forage resources, some areas may have been grazed for a longer duration or at higher rates than in previous years. By mid-July, most grazed areas looked more barren than in spring.

Mountain plovers were not found during the formal surveys in Alberta, or in Saskatchewan. However, three observations were reported in the 2001 breeding season by local residents in the Alberta portion of the study area: one adult south of Onefour in late April, and two observations at different sites northeast of Wildhorse in May—one of one adult and one of two adults. The observers were familiar with mountain plovers, and the observations were in the general areas of previously documented nesting records. These three sites were searched during the ground surveys but mountain plovers were not observed. In the case where two birds were observed, the habitat appeared unsuitable (lightly grazed) for mountain plovers.

Recommendations/Future Direction

If direct management for mountain plover is to occur, the following recommendations are proposed:

- 1) Encourage intensive winter/early spring grazing in high potential habitats in the general vicinity of traditional breeding areas to improve habitat suitability and possibly attract birds arriving in the early spring.
- 2) Continue surveys for breeding birds in habitats with high suitability, with an emphasis on traditional breeding areas. This should include surveys in mid-April to early May, when birds return from the wintering grounds.
- 3) Surveys for breeding birds should be conducted in habitats of limited or unknown potential, including examples that resemble productive atypical nesting habitats in northern Montana.
- 4) Any birds found in future years should be carefully observed for colour-band combinations to determine place of origin.
- 5) If nesting birds are discovered, then surveys should be conducted to document population size, habitat use and nesting success.
- 6) Significant habitat enhancement efforts (intensive grazing and prescribed burning) should be applied to improve and expand suitable habitat in the nesting areas and adjacent high potential habitats.
- 7) Significant efforts in population surveys and habitat management programs should coincide with more favourable climatic conditions (non-drought periods).



mountain plover

COOPERATING AGENCIES

Parks Canada, Environment Canada

For more information contact:

Richard Quinlan or Joel Nicholson (see page 7) and see Species at Risk Report No. 37, Mountain plover habitat and population surveys in Alberta, 2001.

NORTHERN PYGMY-OWL INVENTORY AND HABITAT USE ANALYSIS

Project Supervisor: **Dave Prescott**

REGION:

Provincial (conducted in Bow, Parkland, Northern East Slopes)

TARGET SPECIES:

Northern Pygmy-Owl
(*Glaucidium gnoma*)

WILDLIFE ACT CATEGORY:

Bird of Prey

PROVINCIAL GENERAL STATUS:

Sensitive

purpose

To survey northern pygmy-owls throughout the Eastern Slopes of the Alberta Rocky Mountains and determine habitat preferences.

Background

The northern pygmy-owl is a relatively uncommon species that has been infrequently recorded throughout the foothills and mountains of Alberta, with scattered records eastward through the southern boreal forest. The northern pygmy-owl has a general status of *Sensitive* in Alberta. This designation is largely a result of minimal information being available regarding the species' distribution, abundance and habitat requirements. This lack of quantitative data is not unique to Alberta; in fact the northern pygmy-owl is one of the least studied owls in all of North America.

The northern pygmy-owl is believed to be a habitat and food generalist; however, it is also an obligate cavity nester. Therefore, it must rely on natural cavities or those produced by other species for nesting sites. Cavity nesters are of primary interest to the forestry industry because cavities tend to form in older trees. Most forest harvesting programs aim to harvest stands before cavities occur, when fibre quality is at its prime. Without a firm understanding of species' habitat requirements at the landscape scale, this practice may lead to the loss of forest age and structure classes required by obligate cavity nesters.

This project is the first concerted effort to survey pygmy-owls over a large part of their range in Alberta. The survey will provide critical information on population size, distribution and habitat use.

Methods

Unlike most owl species, the northern pygmy-owl is diurnal, so surveys must be conducted during daylight hours. Surveys ran for eight weeks beginning in early March 2001, coinciding with the onset of breeding activity, and ending in early May. Calls of northern pygmy-owl were broadcast at stops along accessible roads throughout the eastern slopes; stops were at least 1.6 km apart. Portable stereos capable of broadcasting calls audible to the human ear at approximately 400 m were used. The protocol at broadcast locations was: 1) surveys were initiated with a two-minute silent-listening period; 2) calls were then played for a period of approximately 90 seconds; 3) this was followed by a listening period of four minutes.

If an owl responded, its direction and estimated initial response distance were recorded. The type of response was also recorded as call, call and approach, or silent approach. Nontarget owl species that responded or were incidentally observed were also recorded. Other data recorded

at all survey locations included survey date, time, temperature, cloud cover, wind speed, precipitation, topography, road type, number of vehicles, noise level, general habitat characteristics within 200 m and habitat age classification. All locations were recorded with handheld Global Positioning System (GPS) units in UTM format using the NAD83 datum.

COOPERATING AGENCIES

Alberta Conservation Association, Beaverhill Bird Observatory, Parks Canada, Sunpine Forest Products, University of Calgary (Resources and the Environment Program), Weldwood of Canada, Weyerhaeuser Canada (Drayton Valley and Edson Divisions)

For more information contact:

Dave Prescott (see page 7).



northern pygmy-owl

Following the field surveys, a habitat analysis of all survey locations will be performed. Habitat attributes available (directly or inferred) from Alberta Vegetation Inventory (AVI), Digital Elevation Models (DEM) and various other digitally available data layers will be used to identify habitat attributes selected by northern pygmy-owls. Habitat preferences will be analyzed at two scales: minimum and maximum home range estimates.

Results

Over 1700 call surveys were conducted in the spring of 2001. Surveys covered all accessible roads between the TransCanada (Highway 1) and Yellowhead (Highway 16) highways, including within the national parks. The surveys resulted in responses from pygmy-owls at 43 different survey locations. Limited nighttime surveys yielded individuals of several other owl species, including 12 barred owls. During data collection, the project attracted the attention of a graduate student from the University of Calgary, who has now taken this study on as his thesis project. The project will include an expanded analysis of northern pygmy-owl habitat modeling, as well as an analysis of barred owl habitat use using data collected from a number of sites along the Eastern Slopes and foothills.

All fieldwork and compilation of data from various sources have been completed. Habitat associations are currently being identified at all survey points from available Geographic Information System (GIS) layers.

Recommendations/Future Direction

Upon identification of habitat associations, stepwise logistic regression will be used in an analysis of presence/absence data to develop models for both northern pygmy-owls and barred owls to predict the probability of occurrence at any given site. The resulting models will then be tested against incidental owl observations collected from a variety of sources and/or a subset of the original survey data, set aside for this purpose. A written report documenting distribution and habitat use, suitable for submission to a scientific or natural history journal, will be produced. The expected date of completion for this project is October 2002.

PROVINCIAL PEREGRINE FALCON MONITORING PROGRAM, 2001

Project Supervisors: Rob Corrigan (ACA), Dave Prescott, Matt Besko

REGION:

Provincial (conducted in Parkland, Northeast Boreal)

TARGET SPECIES:

Peregrine Falcon (*Falco peregrinus anatum*)

WILDLIFE CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk

Purpose

To conduct annual surveys as a means to monitor long-term trends in nest site occupancy rates, breeding success and productivity of peregrine falcons in Alberta.

Background

Historically, the peregrine falcon nested on the cliffs of most major river systems in the province. During the 1950s and 1960s, global declines of peregrine falcon populations occurred as a result of the indiscriminate use of organochlorine pesticides, most notably DDT. By 1973, there were no known reproducing pairs of peregrines in southern Alberta. Only three occupied territories were known to occur in northern Alberta, all in the Fort Chipewyan area.

In response to peregrine falcon population declines, the Canadian Wildlife Service (CWS) established a captive breeding facility to supply chicks for future release into the natural environment. Between 1976 and 1985, over 130 young were released into the wild in southern Alberta, resulting in two pairs of peregrines fledging young by 1986. Captive-bred peregrines were also used to supplement the remnant existing population in northern Alberta.

Intensive management since the mid-1970s, including the release of 223 young falcons, resulted in expansion and increased productivity in both the northern and southern populations. The number of known occupied territories in southern Alberta increased from 3 in 1990 to 23 in 2000, and from 8 to 25 in northern Alberta. Major release efforts were concluded in 1996; however, the species is still rare in Alberta, and continued population surveys and monitoring are required to ensure that the recovery of the peregrine falcon continues.

As part of the ongoing monitoring and management of peregrines in Alberta, provincial and national surveys have been conducted at five-year

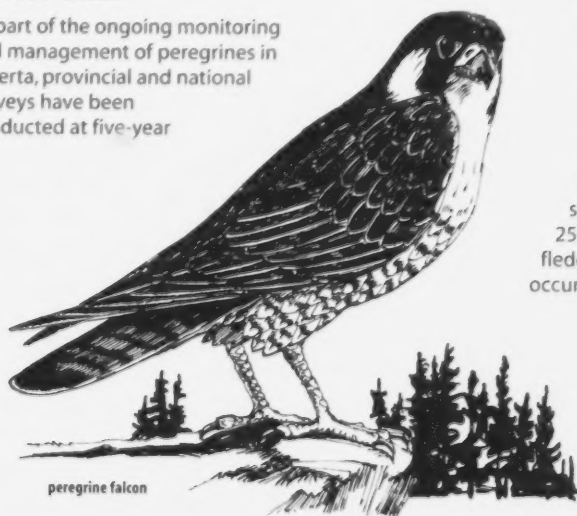
intervals. Following the provincial survey conducted in 2000, it was decided that annual monitoring of the entire northern peregrine population would no longer occur. The number of occupied sites had stabilized and natural productivity was occurring at a sustainable level. Wood Buffalo National Park (WBNP) and the Fish and Wildlife Division (FWD) decided to cooperatively monitor the Fort Chipewyan area, while the park continued monitoring several other northern sites. The Alberta Conservation Association (ACA) and FWD co-coordinated annual monitoring of the core portion of the peregrine's range in southern Alberta.

Methods

Initial occupancy checks of historical nesting sites in southern Alberta occurred between 2 and 26 May 2001, when peregrines were actively courting and defending nesting territories and were relatively easy to detect. Unoccupied sites were revisited up to three times to verify that the site was not in use. Surveys for new territories and/or nesting peregrines were conducted between 2 May and 5 July. Regular monitoring of occupied sites occurred at 10- to 14-day intervals throughout the breeding season. Monitoring was accomplished from a distance of several hundred metres using a 20-60X spotting scope. Observers recorded notes on behaviour, nest chronology, hatching success, nest success and identification of banded birds. Addled eggs were collected in order to perform laboratory analysis for pesticide residues.

Similar checks on occupancy were conducted in the Fort Chipewyan study area. All occupied cliffs were monitored throughout the breeding cycle to determine egg laying, hatching and fledging success. Young that were observed at 25 days of age were considered to have fledged. Although fledging does not occur until 35-40 days, it is often difficult to determine fledging success if the young have flown prior to the site visit.

During final site visits, juvenile peregrines in both the southern and northern



peregrine falcon

Alberta study areas were banded with a United States Fish and Wildlife Service (USFWS) aluminum band on the right leg and a coloured alpha-numeric band on the left.

Results

During 2001, 12 occupied territories were documented in the Parkland Region. These territories were the same ones that were held during 2000. They included seven sites along the Red Deer River, two on the North Saskatchewan River and three in urban or industrial areas. After six additional survey days, no new territories were located. Of the 24 adult peregrines occupying territories in southern Alberta in 2001, 11 were identified as captive-born, 11 were identified as wild-born and two were of unknown origin.

Peregrines attempted to breed at nine of the 12 occupied territories, and successfully fledged 20 young from six sites, yielding an average of 1.67 fledglings per occupied territory or 2.22 fledglings per breeding pair for the Parkland Region. Fifteen of the 20 young that successfully fledged in 2001 were banded. Young at two sites were not banded because of inaccessibility of the nest and an extremely aggressive female.

In 2001 in the Fort Chipewyan study area, territorial pairs occupied 10 sites and one site was occupied by a single male. The number of occupied sites held by territorial pairs has fluctuated between 10 and 12 since 1996. The number of fledged young in 2001 was estimated to be 12. This represents an increase from 2000, when only four young were produced, but is lower than in other years since 1996 with similar occupancy rates.

All information obtained was entered into the Biodiversity/Species Observation Database (BSOD).

Recommendations/Future Direction

Standardized monitoring of breeding sites should be continued on an annual basis in the Parkland Region and the study areas in northern Alberta. Searches for new nesting sites near occupied or historical nesting locations should also continue. This monitoring will allow wildlife managers to detect changes in population size or productivity of this small provincial population, and respond with necessary management actions. Relying on the national survey every five years to monitor occupancy and productivity does not provide an accurate assessment of the population, because peregrine productivity can fluctuate dramatically from year to year in response to events that the five-year survey would not detect (e.g., severe weather).

FWD, WBNP and CWS intend to develop a memorandum of understanding that will commit the three agencies to participate in the ongoing annual monitoring of three study areas in northern Alberta. FWD will continue to be involved in annual monitoring of occupancy and productivity in the Fort Chipewyan study area until the 2005 breeding season. The need for continued monitoring will be assessed following the 2005 national survey.

COOPERATING AGENCIES

Alberta Conservation
Association, Wood Buffalo
National Park, Canadian
Wildlife Service

For more
information contact:

**Dave Prescott, Matt Besko or
Gordon Court** (see page 7) and see
Species at Risk Report No. 34,
Peregrine falcon surveys and
monitoring in the Parkland Region of
Alberta, 2001, and Species at Risk
Report No. 57, Peregrine falcon
surveys and monitoring in the
Northeast Boreal Region of Alberta,
2001.

2001 INTERNATIONAL PIPING PLOVER CENSUS IN ALBERTA

Project Supervisor: **Dave Prescott**

REGION:

Provincial (conducted in Parkland, Northeast Boreal, Bow, Prairie)

TARGET SPECIES:

Piping Plover (*Charadrius melodus*)

WILDLIFE ACT CATEGORY:

Endangered

PROVINCIAL GENERAL STATUS:

At Risk

Purpose

To establish and monitor long-term variation in piping plover populations, habitat use and availability and associated threats in Alberta, as part of the 2001 International Piping Plover Census.

Background

The piping plover is currently listed as either *Threatened* or *Endangered* throughout its range in North America, and is designated as *Endangered* under Alberta's *Wildlife Act*. It breeds on sparsely vegetated beaches on larger alkaline lakes in the central and southern parts of the province. Over the past decade, approximately half of the provincial breeding population has been found on only nine lakes. Populations on each lake are dynamic, changing annually with variation in water levels and the presence of suitable nesting substrates.

The fact that this species is concentrated on a few major lakes, coupled with declining populations elsewhere and potential threats to local populations, suggests that the Alberta population remains vulnerable to future declines. Continued monitoring of known breeding locations is needed to clarify population trends and potential factors limiting population size in the province.

Methods

Beginning in 1991, the International Piping Plover Census has been conducted in Canada and the United States at five-year intervals. The intent of the 2001 census in Alberta, and elsewhere, was to survey all breeding habitat known to be either currently or recently suitable for piping plovers. Piping plover habitat is highly dynamic, and regular monitoring of many potential lakes in the province does not occur between international census periods. In order to identify potential ground sites, aerial reconnaissance of the core of the provincial breeding range was conducted in May 2001.

Ground surveys were conducted between 3 and 16 June 2001. Surveyors walked the shorelines of all lakes, counted single or paired piping plovers, and recorded information such as weather conditions, types of habitats surveyed and occupied by plovers, distance surveyed, and percentage of shoreline not surveyed. Observers were also asked to identify discrete stretches of shoreline on each lake, specific threats to these shorelines, and the presence of California or ring-billed gull colonies, as these birds are known predators of piping plover eggs and chicks. Observers were asked to inspect all birds for the presence of colour bands.

Results

Aerial reconnaissance surveys identified 22 lakes that had not been previously surveyed and appeared to have high or medium potential for plovers, and 11 previously surveyed lakes that contained no apparent breeding habitat. Unsuitable lakes were omitted from the 2001 ground survey, and were assumed to be unpopulated for comparison of populations across censuses. In total, 116 lakes were targeted for ground surveys in Alberta in 2001.

The 2001 census involved 55 volunteers who expended 586.1 person-hours of effort to survey 917.7 km of shoreline on 115 Alberta lakes. Although this greatly exceeded previous survey efforts in the province, fewer birds were counted than in prior years. In total, 60 pairs and 30 single birds (150 individuals) were found on 23 lakes in the province during 2001. This represents a provincial decline of 47.9% since a major survey in 1986, 16.7% since the first international census in 1991, and 45.7% since 1996. On 38 lakes surveyed during all four censuses, populations have declined 73.7% since 1986, 57.7% since 1991, and 63.5% since 1996. Forty-two percent of birds were found on three lakes in 2001 (West Reflex, Muriel and Plain), indicating that birds are highly concentrated in a small number of areas. The Parkland Region supported most of the birds (91, or 60.7% of total) in the province.

Seventy-four lakes were described as having potentially suitable habitat for plovers, with the habitat distributed in 366 individual patches. Thirty-four (31%) of these lakes were occupied by piping plovers. Grazing by cattle was identified as a threat to piping plovers on approximately two-thirds of the lakes, and on more than 40% of individual beaches. Vegetation encroachment, motorized vehicles, and recreational/residential use were also prominent threats to piping plover habitat.

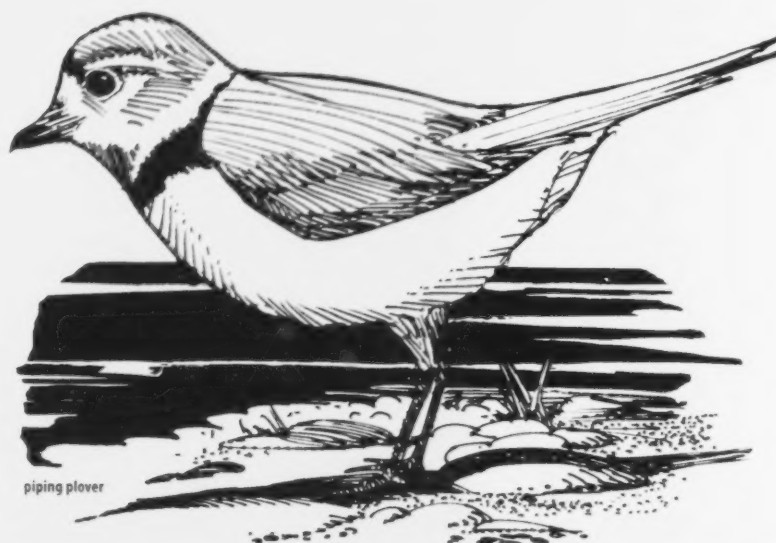
The smaller population present during 2001 might be partly attributable to low water levels following three years of below-average precipitation in southern and central Alberta (77.5% of water bodies were reported to have lower water levels than in 1996). Birds may have redistributed to other parts of their

breeding range where habitat conditions were more favourable. Assessment of this possibility must await final tabulation of census results from across North America.

Recommendations/Future Direction

A key element of management efforts will be ongoing surveys in the province. These surveys are critical for monitoring population trends, tracking habitat suitability, and determining the success of management initiatives. The following recommendations to improve census effectiveness are offered:

- 1) Continue participation in the five-year survey, but monitor a subset of key lakes on an annual basis.
- 2) Eliminate lakes from the survey that have never supported piping plovers, and that appear to have no possibility of supporting plovers in the future.
- 3) Continue to search for new water bodies that have never been surveyed, but that could support plovers. Four such lakes were identified during the 2001 aerial survey and subsequent ground surveys.
- 4) Continue to improve observation skills of observers through regular training and participation in ongoing piping plover research and management.
- 5) When possible, breeding surveys should be followed by brood surveys to monitor productivity on lakes in Alberta.



piping plover

COOPERATING AGENCIES

Alberta Conservation Association, Canadian Wildlife Service, Ducks Unlimited Canada, numerous volunteers

For more information contact:

Dave Prescott (see page 7) and see Species at Risk Report No. 27, The 2001 international piping plover census in Alberta.

ALBERTA PIPING PLOVER PREDATOR EXCLOSURE PROJECT

Project Supervisors: **Lance Engley** (ACA), **Dave Prescott**

REGION:

Provincial (conducted in Bow, Parkland)

TARGET SPECIES:

Piping Plover (*Charadrius melodus*)

WILDLIFE ACT CATEGORY:

Endangered

PROVINCIAL GENERAL STATUS:

At Risk

purpose

To decrease depredation of piping plover nests in Alberta through the use of predator exclosures, and to continue long-term population monitoring through annual surveys of adults and broods.

Background

The piping plover is currently listed as either *Threatened* or *Endangered* throughout its range in North America, and is designated as *Endangered* under Alberta's *Wildlife Act*. Nest depredation has been identified as a significant limiting factor to piping plover reproductive success in the Canadian prairies. During 1995 to 1997, predator exclosures (cages that exclude predators from the nest but allow access by adult piping plovers) were tested and found to significantly reduce nest depredation. A province-wide program to install exclosures at all nest sites was initiated in 1998. This method has proven to be a relatively inexpensive and effective tool to aid the recovery of the piping plover, and encourages partnerships between a variety of government and nongovernmental organizations.

Methods

The following lakes were targeted for the exclosure project: the westernmost of the Reflex Lakes ("Reflex Lake"), Killarney Lake including the pond at the north end of the lake, Freshwater Lake, Cipher Lake, "Piper Lake", Metiskow Lake and Sunken Lake. Adult and brood surveys were also carried out on these lakes as well as on Handhills Lake, Dowling Lake, "Chain Lake #4", Little Fish Lake and Birch Lake.

In addition to the large exclosures (3 m diameter, 1.2 m height) used in 2000, smaller exclosures (0.6 m diameter, 0.4 m height), with the same overall style as the large ones, were also used in 2001. Nests were monitored throughout the nesting period and the young were banded with aluminum and colour celluloid bands that identified them by year and lake of origin.

Results

In total, 32 nests were found on eight water bodies (see table). Overall nest success (those nests hatching at least one egg) was 69% (22/32). Eighty percent (8/10) of the nests treated with small exclosures hatched. Similarly, 80% (8/10) of nests treated with large exclosures hatched, whereas only 50% (6/12) of nests that were not in exclosures were successful. No signs of depredation of adults were found at any of the nests monitored in 2001.

Sixty-seven chicks were banded in 2001. In addition to observations of newly banded chicks, 16 re-sightings of birds previously banded in either Alberta, Saskatchewan or on the wintering grounds were recorded.

Substantially fewer nests were found in 2001 ($n = 32$) than in 2000 ($n = 58$). This reflected the smaller populations found on most lakes, and may be in part a result of extremely dry conditions. Many of the water bodies that normally have nesting piping plovers were dry in 2001.

Preliminary results suggested no difference in overall nest success between the large and small exclosure designs. However, the smaller exclosures did have advantages. Disturbance to the birds was minimized as the small exclosures could be placed over the nest by a single researcher in about 30 seconds. Conversely, the larger exclosures required at least two researchers and generally took between 5 and 10 minutes to set up. In addition, the smaller exclosures were inconspicuous when placed on nesting beaches. No evidence of cattle approaching the small exclosures was recorded. Cattle are inclined to rub against the larger exclosures, using them as "scratching posts".

Data gathered during this project were entered into the Biodiversity/Species Observation Database (BSOD).

Recommendations/Future Direction

Research on this management technique should continue, as nest depredation is still a limiting factor in Alberta. Sample sizes were low in 2001, so continued application and monitoring of the small predator exclosures is needed to properly evaluate

their overall effectiveness. The use of predator exclosures will address key elements in the *Alberta Piping Plover Recovery Plan, 2002-2004* and will play an important role in ongoing efforts to recover this *Endangered* species in Alberta.

COOPERATING AGENCIES

Alberta Community Development—Parks and Protected Areas Division, Alberta Conservation Association, Alberta Sport, Recreation, Parks and Wildlife Foundation, Canadian Wildlife Service, Alberta North American Waterfowl Management Plan, TD Friends of the Environment Foundation, World Wildlife Fund

For more information contact:

Dave Prescott (see page 7) or **Lance Engley** (Lance.Engley@gov.ab.ca) and see Engley, L. 2001. Use of predator exclosures to protect piping plover nests in Alberta. (Report prepared for Alberta Conservation Association).

Summary of piping plover nesting on eight study lakes in Alberta and Saskatchewan

Lake Name	Province	No. of Nests	No. of Successful Nests	Overall Nest Success
Birch Lake	AB	5	1	0.20
Cipher Lake	AB	1	0	0.00
Freshwater Lake	SK	4	3	0.75
Killarney Lake	AB	1	0	0.00
Metiskow Lake	AB	0	0	n/a
Piper Lake	AB	1	1	1.00
Reflex Lake	AB/SK	18	15	0.83
Sunken Lake	AB	2	2	1.00
Total:		32	22	0.69

MOUNTAINVIEW TRUMPETER SWAN SURVEY, 2001

Project Supervisor: **Richard Quinlan**

REGION:
Prairie

TARGET SPECIES:
Trumpeter Swan (*Cygnus
buccinator*)

WILDLIFE ACT CATEGORY:
Threatened

PROVINCIAL GENERAL STATUS:
At Risk

purpose

To confirm the use of suitable nesting ponds by trumpeter swans in southwestern Alberta, and compare hatching success to the number of young swans reaching the fledging stage.

Background

Trumpeter swan abundance and distribution have been increasing in recent years in Alberta, and record numbers were recorded in the province during the 2000 North American census. Although the bulk of the breeding population in the province occurs in the Grande Prairie region, a small subpopulation of trumpeter swans exists in the Cardston-Pincher Creek area. This area has been previously inventoried in the late summer during 1985, 1990, 1995, and 2000.

Poor recruitment to fledging was recorded in 2000, with only three of seven broods producing a total of 10 cygnets. A follow-up survey was conducted in 2001, in early summer, to determine whether the swans were experiencing losses during incubation or after hatching. Determining the level of productivity and threats to the local population is critical for developing future management initiatives.

Methods

The study area encompassed all of the foothills fescue and montane wetland complexes from Pincher Creek south to Waterton and east to Police Outpost Provincial Park.

An aerial survey was conducted in early July to count all trumpeter swans and to determine where successful production had occurred. All wetlands were surveyed from an approximate elevation of 300 m above the water. If swans were observed, another pass was made at a lower elevation to search more thoroughly for cygnets. Names of lakes and ponds and UTM locations were recorded along with the number of swans classified as pairs, cygnets, single and/or flocked. A ground survey was conducted at verified production sites in late August to compare production to recruitment.

Results

Twenty-one trumpeter swans were observed on eight ponds in the study area. Fewer swans were observed in 2001 than during the 2000 census. Reduced numbers of cygnets accounted for some of the difference, while fewer flocked birds accounted for the remainder. The total number of swans observed in 2001 was comparable to those recorded in the 1990s; however, the numbers of cygnets and flocked birds were variable.

Comparison of trumpeter swan numbers
in surveys from 1985 to 2001

Survey Date	Pairs	Cygnets	Single/flocked	Total
29 August 1985	3	0	0	6
23 August 1990	5	9 (2 broods)	1	20
16 August 1995	3	0	15	21
10 August 2000	7	10 (3 broods)	13	37
8 July 2001	6	3 (1 brood)	6	21

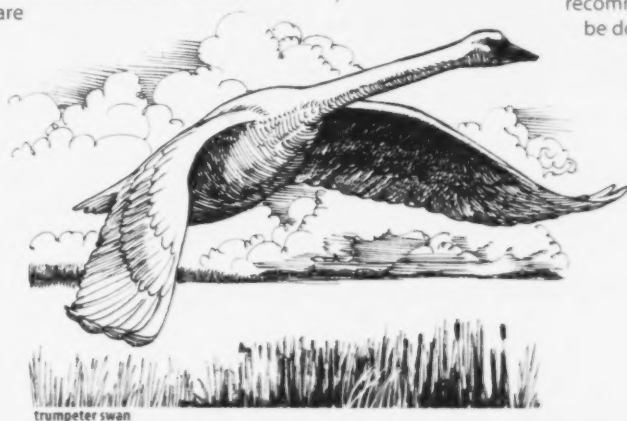
Of the six pairs of swans observed in 2001, only one pair was successful in producing cygnets. Low water levels during the early nesting period may have influenced nest placement and increased nest vulnerability to depredation and flood events.

Recommendations/Future Direction

The Cardston-Pincher Creek area supports a small breeding population of trumpeter swans. Given the low abundance in the area and the late age of maturity of swans (age 5), it would be difficult for the population to rebound quickly from large declines. Sites regularly used by trumpeter swan pairs should be evaluated for threats to the population and to habitat, and management recommendations should be developed.

COOPERATING AGENCIES

Alberta Sustainable Resource
Development—Land and
Forest Division, Waterton
Lakes National Park



trumpeter swan

For more
information contact:

Richard Quinlan (see page 7).

WESTERN AND EARED GREBES OF CENTRAL ALBERTA— INVENTORY, SURVEY TECHNIQUES AND MANAGEMENT CONCERNS

Project Supervisors: **Hugh Wollis, Lisa Wilkinson**

REGION:

Northern East Slopes

TARGET SPECIES:

Western Grebe (*Aechmophorus occidentalis*), Eared Grebe (*Podiceps nigricollis*)

WILDLIFE ACT CATEGORY:

Non-game Animals

PROVINCIAL GENERAL STATUS:

Sensitive: Western Grebe

Secure: Eared Grebe

purpose

To gather data on western and eared grebes to help assess their status and provide direction for conservation and management.

Background

Western grebes and eared grebes are colonial nesting water birds that build precarious floating nests of aquatic vegetation that are either secured to emergent vegetation or free-floating. Although these grebe species have a wide distribution across western and central North America, indications are that they may be declining and could become threatened over the long term. The status of the western grebe is of particular concern. Lakes are being increasingly affected by shoreline development, aquatic vegetation removal, recreational activities (e.g., boating) and water level declines. All of these activities can disturb or destroy grebe colonies.

Despite these changes, relatively little research and monitoring attention has been directed toward grebes. As a result, this project was designed to review existing data and conduct surveys to locate grebe colonies, estimate population sizes and assess reproductive success. It is important to note that grebe habitat supports other wildlife, including fish, waterfowl and amphibians.

Methods

Surveys were conducted in the Stony Plain area. Several survey methods were tested, including aerial surveys, boat surveys (systematic and meandering shoreline surveys), shoreline telescope surveys and ground surveys for nests. Most of the lakes in the area were surveyed by plane, and most lakes that supported colonies were surveyed using a variety of ground-based survey techniques.

Emphasis was placed on western grebe colonies, all of which were visited during the nesting season to acquire estimates of the adult population, the number of nests and clutch sizes, and to look for evidence of hatching and/or nest depredation. Surveyors were careful to minimize disturbance to grebes by conducting the survey as quickly as possible, and in some cases transects were used to survey a representative portion of the colony, further reducing disturbance. A second visit occurred after fledging to estimate the number of young and confirm the number of nests. Nest counts were also conducted on three eared grebe colonies.

Results

A population of approximately 2570 adult western grebes was estimated within the study area (52

lakes), most of which were found on only three lakes. Mean clutch size ranged from 1.8 to 2.8 eggs/nest ($n = 433$ nests, three colonies), and only 34% of nests were active ($n = 1271$ nests, three colonies), suggesting high rates of nest abandonment. Results suggest that western grebes are being negatively affected both locally and regionally by cumulative effects: habitat loss, human disturbance and water level declines. At the Wabamun Lake colony, nest depredation by corvids also appears significant. The Wabamun Lake and Lac Ste. Anne colonies are considered nationally important for western grebes.

Approximately 7627 eared grebes were observed on 15 lakes, with nesting confirmed on 10 lakes. Mean clutch size ranged from 2.2 to 2.8 eggs/nest ($n = 446$ nests, three colonies), which is comparable to other studies, and 88% of nests were active ($n = 512$ nests, three colonies). Although eared grebes appear to be abundant and widely distributed throughout the study area, caution is necessary because they seem to be vulnerable to many of the same disturbances that affect western grebes. This vulnerability is shown by their preference for colonizing lakes with relatively little human presence. The George Lake population is considered nationally important for eared grebes, whereas Oldman Lake, Lac Ste. Anne and Isle Lake are regionally important.

Overall, the most effective means of locating western and eared grebes was a combination of aerial and ground surveys. Ground surveys for nests were best for estimating relative abundance, measuring reproductive success and characterizing nesting habitat.

Recommendations/Future Direction

Annual monitoring of grebe populations is recommended for the next five years, with emphasis on western grebes and their reproductive success. It is imperative to gather population trend information to determine if the populations are declining. It is also important to expand surveys to other parts of the province and determine the status of these species. In addition, mitigative measures are required, including boating restrictions around colonies during nesting, Protective Notations (PNTs), signage and public education.

COOPERATING AGENCIES

Alberta North American Waterfowl Management Plan, Alberta Conservation Association, Canadian Wildlife Service

For more information contact:

Lisa Wilkinson (see page 7) and see Species at Risk Report No. 41, Western (*Aechmophorus occidentalis*) and eared (*Podiceps nigricollis*) grebes of central Alberta: inventory, survey techniques and management concerns.

REMOTE AREAS PROJECT—BOREAL SONGBIRD MONITORING

Project Supervisor: **Matt Besko**

Project Researcher: **Dr. Fiona Schmiegelow** (Principal Investigator, University of Alberta)

purpose

To obtain information on the distribution and relative abundance of boreal songbirds in northern Alberta, and to establish relationships between resource development activities and changes in the composition and relative abundance of boreal bird communities.

Background

With the continued expansion of both the energy and forestry sectors in Alberta, there is increasing concern over the effects of the human footprint on boreal wildlife. Birds are an excellent target group for monitoring, as there are well-developed surveys for these species, they are relatively easy to detect, and their mobility permits a potentially rapid response to landscape changes. In Alberta, three species of wood warblers have been identified as particularly sensitive to habitat alteration in the boreal forest: the black-throated green warbler, the bay-breasted warbler, and the Cape May warbler. However, very little is known about the specific responses of these species to anticipated landscape change.

The University of Alberta Remote Areas Program (RAP), initiated in 2000, is implementing a broad-scale sampling project throughout northern Alberta. The project targets regions that are characterized by a range of attributes which are linked to future landscape change (e.g., loss of older forest, changes in forest configuration, and expansion of energy sector activities). This project is a joint initiative of the Sustainable Forest Management Network, the Federation of Alberta Naturalists Breeding Bird Atlas Update Project and Alberta Sustainable Resource Development (Species at Risk Program), with additional funding from a number of industry partners.

Methods

Owing to the large expanse of forest in northern Alberta, it is not feasible to survey all areas. Thus, a modelling approach was used to select sites and guide field efforts.

Sites were represented by 100-km² landscapes (approximately one township in size). A multivariate approach, based on forest inventory, harvesting data and digital coverages, was used to characterize habitat composition and structure and the human footprint at all potential sites. Selection of sampling sites was model-based, using a form of optimal sample design. The goal was to sample those landscapes (sites) that will provide the most information about

parameters of theoretical and management interest, namely those describing the abundance and distribution of commercially important habitat types (such as older, merchantable forest), and of recent disturbances (both natural and anthropogenic). A range of values for each parameter of interest was included in the sample (i.e., low to high) in order to address threshold issues.

Field sampling was initiated in May 2001 in northeastern Alberta. The study area was bounded on the south by 54°30'N, on the west by 117°30'W, on the north by 58°N, and on the east by the Saskatchewan border (110°W). At each site, birds were surveyed using two primary sampling techniques. Line transect surveys were conducted on 9-km triangles that were selectively placed to sample representative habitats within a landscape. Point count surveys focused on merchantable forest types, with a range of forest age, composition and disturbance history. Sampling occurred in older (100 yr+) mesic stands, and call playbacks were used late in the season to solicit additional observations. In total, 43 landscapes were surveyed in the summer of 2001.

Results

Data on the abundance and occurrence of the target species in sampled landscapes (sites) are presented below.

Abundance and occurrence of target species

Species	# Records (%)	# Sites (%)	Rank*
Bay-breasted Warbler	19 (0.18)	10 (23)	56
Black-throated Green Warbler	150 (1.4)	31 (72)	14
Cape May Warbler	21 (0.20)	11 (26)	48

* Abundance rank (most to least common, of 124 species recorded during surveys)

Data collected to date have yielded a model with fairly high explanatory power for the black-throated green warbler, and moderate explanatory power for the Cape May and bay-breasted warblers, based on coarse, landscape-level

REGION:

Provincial (conducted in Northeast Boreal, Northwest Boreal)

TARGET SPECIES:

Black-throated Green Warbler (*Dendroica virens*), Bay-breasted Warbler (*Dendroica castanea*), Cape May Warbler (*Dendroica tigrina*)

WILDLIFE ACT CATEGORY:

Non-game Animals

(ESCC Recommendation—Special Concern: Black-throated Green Warbler)

PROVINCIAL GENERAL STATUS:

Sensitive

attributes. Both natural landscape features (e.g., amount and configuration of older forest) and anthropogenic factors (e.g., intensity of forestry and energy sector activity) help to explain variation in the abundance and distribution of these species. Modelling of data at a fine scale, using more detailed habitat information, has not yet been completed. A larger sample size of sites, and some revision of sampling protocols (i.e., greater emphasis on older, coniferous-dominated forests) will likely increase the model's ability to characterize requirements for these species across a variety of spatial scales important to management.

Recommendations/Future Direction

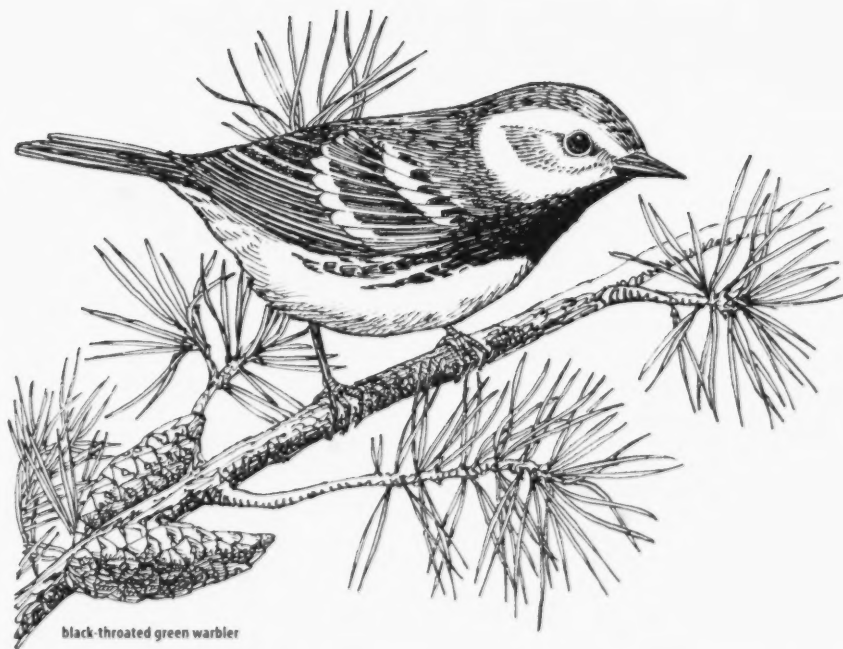
Some sites visited in 2001 will be revisited in 2002, in order to quantify temporal variability in target species' population sizes. Expansion of sampling across the forested region of Alberta is planned, subject to funding. Data collected to date will be used to refine site selection and sampling techniques. The intensity of sampling should be increased in older coniferous forests, in particular, to better represent the habitat affiliations of the three target species. This project will run to 2005, as will the Project Update of the Alberta Breeding Bird Atlas.

COOPERATING AGENCIES

University of Alberta,
Federation of Alberta
Naturalists, Weyerhaeuser
Canada, Alberta Pacific Forest
Industries, Sustainable Forest
Management Network, Slave
Lake Pulp Company, Sundance
Forest Products

For more
information contact:

Matt Besko (see page 7) and see
Species at Risk Report (in prep.),
Modelling the habitat needs of the
black-throated green, bay-breasted and
Cape May warblers in Alberta:
distribution, abundance and response
to disturbance.



black-throated green warbler

MICROSATELLITE ANALYSIS OF GENETIC POPULATION STRUCTURE IN WESTSLOPE CUTTHROAT TROUT IN ALBERTA

Project Supervisors: **Sue Cotterill, Brian Lajeunesse**

Project Researcher: **Mariola Janowicz** (Concordia University College of Alberta)

purpose

To assess the status of pure native westslope cutthroat trout populations, and to assess the genetic variation and extent of hybridization between cutthroat trout and rainbow trout.

Background

Native westslope cutthroat trout has declined in both abundance and distribution in southwestern Alberta. Native stocks originally occupied the Bow and Oldman river drainages and accessible tributaries, but are now considered rare and are believed to exist only in short reaches of a few isolated headwaters of major tributaries.

Cutthroat trout are vulnerable to extreme flood events and natural disasters, but the most significant habitat threats relate to fragmentation of habitat by industrial and agricultural activities in the foothills of the Eastern Slopes.

Declines in native cutthroat trout populations have also been attributed to overfishing and introduction of non-native trout species and stocks. Hybridization with introduced cutthroat trout stock and rainbow trout threatens the genetic integrity of native stocks. The intent of this study is to determine the genetic structure of westslope cutthroat trout populations in Alberta and the extent of introgressive hybridization. This study will provide information critical to the management of westslope cutthroat trout in the province.

Methods

Tissue samples (adipose and/or pectoral fins) were collected from 56 westslope cutthroat trout populations during the summers of 2000 and 2001. Collection techniques included electrofishing and angling within select stream reaches that ranged in size from 250 m to 1 km. Sample size ranged from 1 to 32 individuals at sites where cutthroat trout were found. In total, 960 samples were collected. Samples were preserved in 95% ethanol or dried. Samples of hatchery rainbow trout and Yellowstone cutthroat trout are in the process of being obtained.

DNA was extracted from the samples and the concentration and quality of isolated genomic

DNA was determined by agarose gel electrophoresis. Six microsatellite loci are being used to amplify the DNA through standard polymerase chain reaction (PCR). DNA fragments produced through the amplification process will be sorted by size using electrophoresis, and analyzed using the computer software GeneScan Analysis 2.02.

Following completion of the lab analyses, the allelic frequency analysis will be performed and population differentiation will be tested at: 1) each locus; 2) over all loci among all populations; and 3) between all possible population pairs on an overall basis and within each watershed. Estimates of genetic subpopulation structure, genetic distance and inbreeding coefficients will also be obtained.

Results

DNA was isolated from all 960 adipose and/or pectoral fin tissue samples. The six loci were successfully amplified from the DNA of four individuals from different populations in a trial amplification run. To obtain better resolution of each locus, PCR conditions are being re-evaluated for each locus individually. Work has been initiated to amplify all DNA samples, with 144 samples completed by the end of March 2002.

Recommendations/Future Direction

Lab analyses will be completed by summer 2002. Data analyses and report writing will follow.

REGION:

Provincial (conducted in Prairie, Bow, Parkland)

TARGET SPECIES:

Cutthroat Trout (*Oncorhynchus clarki*)

WILDLIFE ACT CATEGORY:

None

PROVINCIAL GENETIC STATUS:

Secure

COOPERATING AGENCIES

Concordia University College of Alberta, University of Alberta, University of Agriculture in Szczecin, Poland, Freshwater Research

For more information contact:

Sue Cotterill (see page 7).

SHORTJAW CISCO INVENTORY AND STATUS IN ALBERTA

Project Supervisors: **Matt Besko, Larry Rhude**
Project Researcher: **Mark Steinhilber** (Provincial Museum of Alberta)

REGION:

Provincial (conducted in Northeast Boreal)

TARGET SPECIES:

Shortjaw Cisco (*Coregonus zenithicus*)

WILDLIFE ACT CATEGORY:

None

PROVINCIAL GENERAL STATUS:

May Be At Risk

purpose

To determine the distribution, relative abundance and status of shortjaw cisco in Alberta.

Background

The shortjaw cisco is considered *Threatened* in Canada (COSEWIC 2001) and *May Be At Risk* in Alberta (Alberta Sustainable Resource Development 2001). The Alberta designation is based largely on uncertainty regarding the rarity of this species in the province. To date, it has been verified at only one locality—Barrow Lake in the Canadian Shield region north of Lake Athabasca—although unconfirmed reports have also come from Lake Athabasca, Gregoire Lake and Cold Lake.

The main objective of the work undertaken in 2001 was to search for other populations of shortjaw cisco in the province. Additional distribution data would assist in assessing the status of this species by providing: 1) updated distribution data; 2) a search effort context in which to evaluate the number of reported element occurrences; and 3) a baseline for evaluation of future distribution trends. Previous work on the shortjaw cisco in Barrow Lake determined that this population appears stable and is under little immediate threat.

Methods

Three Shield lakes—Andrew Lake, Colin Lake and Lake Athabasca—were sampled for cisco species (shortjaw cisco and cisco or lake herring, *C. artedii*) in June and September 2001. Two areas were sampled in Lake Athabasca: 1) along the southern shore just west of the Alberta-Saskatchewan border; and 2) the Black Bay area near Uranium City, Saskatchewan. These sites were accessed by floatplane from Fort Smith, NT. One hundred additional cisco samples were acquired from Cold Lake in June 2001 by Alberta Sustainable Resource Development (SRD) staff.

Gill nets were used to capture samples over a three- to six-day period at each site. Data obtained will be entered into the Fisheries Management Information System (FMIS). Data analysis included relative abundance estimates for cisco populations (catch-per-unit-effort), a morphological assessment of specimens (primarily gillraker counts), and determination of age structure of the cisco samples.

Results

Two hundred and ninety-six ciscoes were captured at three lakes in northeastern Alberta

in 2001. Andrew Lake and Colin Lake support good populations of a slow-growing dwarf form of lake herring. The species is apparently abundant in both of these lakes in suitable, deep-water habitats. No evidence of shortjaw cisco was found at these sites.

In Lake Athabasca, gillraker number frequency distributions suggest that three forms of cisco may occur sympatrically in this lake. One form is relatively large (max. size > 300 mm fork length [FL]) and has many gillrakers (mode = 53). The most common form is small (< 200 mm FL) with a modal gillraker count of 42. A third form is relatively small (most < 200 mm FL) with a gillraker count < 40. This last group is believed to represent shortjaw cisco. Thirty-three individuals from a sample of 146 ciscoes exhibited gillraker counts of 39 or fewer; 16 had 37 or fewer. These numbers are indicative of shortjaw cisco. Most of the specimens with relatively few gillrakers also had short gillrakers—another characteristic of shortjaw cisco. With the exception of two individuals, all ciscoes with gillraker counts < 40 were captured at water depths of 20 m or more, on the Saskatchewan side of the lake. This deep-water habitat is consistent with that of most shortjaw cisco populations throughout North America, including the type locality of Lake Superior. Although there are exceptions (e.g., Barrow Lake and Lake Nipigon, MB), within a given lake the pattern of deep water versus shallow water preference seems consistent. Since most of Lake Athabasca in Alberta is much shallower than 20 m, it is likely that this area contains little suitable shortjaw cisco habitat.

The majority of the cisco in Cold Lake can be described as a rather small but otherwise unremarkable form of lake herring. However, one individual in the sample of 100 specimens analyzed was believed to be a shortjaw cisco based on a low gillraker count (39), an extraordinarily short dorsal fin base, and an ovary in an advanced state of development. The modal gillraker number in the Cold Lake sample was 48—well within the lake herring range. Although lake herring with 39 gillrakers have been encountered rarely at other Alberta localities, this individual is unique in that it is separated from all other specimens in the gillraker number frequency distribution by a gap

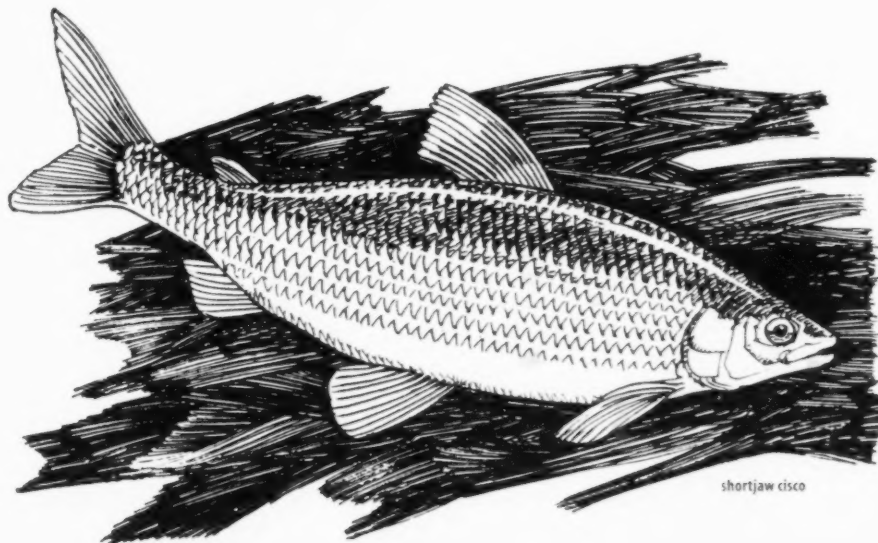
of two rakers. The discontinuity suggests that this is not simply the lower tail of a normal distribution. With rare exceptions, ciscoes spawn in mid- to late fall; therefore, specimens collected in the spring typically exhibit gonads in an early stage of maturation. All of the Cold Lake specimens were collected in early June, yet the putative shortjaw cisco specimen had well-developed ova—unlike any other specimen examined. Further work is required to confirm the identity of this specimen.

Recommendations/Future Direction

Barrow Lake remains the only verified population of shortjaw cisco in the Shield area of northeastern Alberta. Since 1996, 17 lakes have been surveyed specifically for this species, but no new populations have been found. Preliminary results suggest that shortjaw cisco inhabit deeper portions of Lake Athabasca in Saskatchewan, but little suitable habitat exists in Alberta. The data suggest that shortjaw cisco are indeed rare in northeastern Alberta. Other populations may eventually be found; however, the number of occurrences in Alberta will undoubtedly remain low. Current data are insufficient to calculate population trends in Barrow Lake, but relative abundance and catch-per-unit-effort data suggest that the population is stable. Continued monitoring of this population at 5-year intervals is recommended. Additional sampling on the Alberta side of Lake Athabasca during the winter months may reveal

movement of shortjaw cisco into the shallower water west of the border when temperature is not a limiting factor. Further sampling of deep-water habitats in Cold Lake is needed to verify the existence of shortjaw cisco at this site. Detailed analysis of specimens from Gregoire Lake should also be conducted to confirm the presence of shortjaw cisco at this locality.

Suspected shortjaw cisco populations in Alberta should be protected from all forms of human exploitation, including commercial fishing, sportfishing and habitat degradation, until their identity can be confirmed.



shortjaw cisco

COOPERATING AGENCIES

Provincial Museum of Alberta

For more
information contact:

Mark Steinhilber
(Mark.Steinhilber@gov.ab.ca) or
Matt Besko (see page 7).

INVENTORY OF RARE FISH SPECIES IN THE ST. MARY AND MILK RIVER DRAINAGES

Project Supervisors: **Terry Clayton, Richard Quinlan**

REGION:

Provincial (conducted in Prairie)

TARGET SPECIES:

Shorthead Sculpin (*Cottus confusus*), Western Silvery Minnow (*Hybognathus argyritris*), Stonecat (*Naturus flavus*), Brassy Minnow (*Hybognathus hankinsoni*)

WILDLIFE ACT CATEGORY:

None

PROVINCIAL GENERAL STATUS:

May Be At Risk: Shorthead Sculpin, Western Silvery Minnow

Undetermined: Stonecat, Brassy Minnow

Purpose

To determine the distribution, relative abundance and habitat use of "St. Mary" shorthead sculpin, western silvery minnow, stonecat and brassy minnow in the St. Mary and Milk river drainages.

Background

In Alberta, the Milk River and St. Mary River drainages provide key habitat for a number of poorly studied and *May Be At Risk* fish species. These drainages are also key water sources for domestic, agricultural and industrial water users. Water flow rates in the Milk River are controlled by an irrigation canal that links the St. Mary River to the North Milk River in Montana.

The Fish and Wildlife Division initiated an inventory of the fish fauna in these two rivers during the summer of 2000. Three non-game species were of particular interest: shorthead sculpin, western silvery minnow and stonecat. In Alberta, the shorthead sculpin is only found in the St. Mary River (a tributary of the Oldman River) and the Milk River (a tributary of the Missouri River). This species has likely expanded into the Milk River from the St. Mary River. Both the western silvery minnow and stonecat are only known to occur in the Milk River basin. The national status of the western silvery minnow was recently upgraded from *Special Concern* to *Threatened* by COSEWIC (2001).

Survey work continued in 2001 and again focused on documenting abundance, distribution and habitat preferences of the target species, as well as on limiting factors for both habitat and populations.

Methods

The study area included the main stem of the Milk, North Milk and St. Mary rivers, and Lee Creek (a major tributary to the St. Mary River). Two 7-10 day sampling sessions were conducted during summer and fall, 2001. Backpack electrofishing and beach seining were the primary techniques used to sample fish.

Results

All species of interest were present in low numbers, with the exception of the shorthead sculpin, which was moderately abundant. When compared to previous inventory work conducted in the mid-1980s, the abundance of shorthead sculpin has increased in the North Milk River and the main stem of the Milk River, and has remained stable in the lower Milk River. Western silvery minnow, brassy minnow and stonecat were not abundant; however populations appeared to be stable.

Spawning, rearing and feeding habitats for shorthead sculpin are not limited within these

systems. Similarly, overwintering habitat is well represented in both rivers, provided the water flow is adequate. However, given the drought conditions during 2000 and 2001 and the very low flow rates during December 2001 (0.06 m³/s), fish may have been subjected to unsuitable habitat conditions during the winter of 2001-2002.

Stonecats often occupied patches with large substrate where available, although these sites tended to be isolated. Overwintering habitat for stonecats is likely limited in the Milk River during most years, as a result of the very low winter flows.

Western silvery minnows typically select rearing habitat in quiet water areas in rivers with flows of slow to moderate velocity. This type of habitat and suitable feeding areas appeared to be well distributed in the lower reaches of the Milk River during the study. However, as a result of the extreme drought conditions and early closure of diversion head gates in Montana, only isolated pools were present in the lower Milk River near the Pinhorn Grazing Reserve during the fall 2001 sampling program. Fish in this area were stranded in shallow isolated pools and overwinter survival was likely affected.

Fish and habitat data were entered into the Fisheries Management Information System (FMIS).

Recommendations/Future Direction

Of major concern was the limited availability of water for fish during the winter of 2001-2002. During fall 2001, there was no flowing water in the lower sections of the Milk River and only small isolated pools with shallow water depths were present. If unsuitable living conditions persisted (e.g., pools freezing to the bottom, low dissolved oxygen levels), it is unlikely that fish were able to successfully emigrate from or survive in the mid- to lower sections of the river. Fisheries and Oceans Canada funded an early spring study to determine the extent of winterkill in the isolated pools in the lower Milk River.

Future monitoring studies should be completed on a scheduled basis (i.e., every three years) using standardized methods (e.g., backpack electrofishing), to continue to assess the status of the species of interest. Sampling should occur during similar times of the year (e.g., fall) and be conducted at representative (index) sites.

COOPERATING AGENCIES

Fisheries and Oceans Canada

For more
information contact:

Terry Clayton (Terry.Clayton@gov.ab.ca)
or **Richard Quinlan** (see page 7) and see
Species at Risk Report No. 45, Fish species at
risk in the Milk and St. Mary drainages.

invertebrates

SURVEY OF NATIVE GRASSLAND BUTTERFLIES IN THE PEACE PARKLAND REGION OF NORTHWESTERN ALBERTA—2001

Project Supervisors: Adam James, Tara Szkorupa

purpose

To assess the current distribution and abundance of eight butterfly populations that are disjunct from southern populations and are closely associated with the remnant native grasslands of the Peace River Parkland Natural Subregion.

Background

The native grasslands of the Peace River Parkland are restricted to the slopes of the Peace River and adjoining tributaries, as well as to upland fragments that currently represent less than 0.5% of the original native grassland land base. The populations of butterflies dependent on these native grasslands are of conservation concern because of their limited distribution and the significant reduction and alteration of their grassland habitat. Very few butterfly records have been collected in the Peace River Parkland since the early 1980s and historical records for most of the butterflies are also limited.

Methods

The plains skipper, Pike's old world swallowtail, coral hairstreak, striped hairstreak, Gorgone checkerspot, northern checkerspot, Uhler's arctic and Alberta arctic were chosen for the 2001 survey based on preliminary general status assessments and recommendations from other researchers. Historical sites along the Peace River and adjoining tributaries from the British Columbia border to the town of Peace River were visited, as well as new sites containing suitable native grassland habitat. Upland sites near Fairview and east of Grande Prairie were also surveyed.

Observers walked the area and recorded all butterflies seen as well as weather conditions and total survey time. Surveys were not conducted on cloudy days. Every effort was made to assess and thoroughly search suitable microhabitats within each area. Adult butterflies were identified by sight, usually after capture with an insect net. On one occasion, larvae of the Pike's old world swallowtail were also identified. Specimens of each species were collected for possible future DNA analysis at the University of Alberta and for a reference collection being developed by the Fish and Wildlife Division.

Results

Between 8 June and 22 August 2001, 26 sites were visited at least once, including ten out of 28

historical sites and 16 new sites. All of the surveyed populations, except the plains skipper and the coral hairstreak, were restricted to native grassland slopes along the Peace and Smoky rivers, associated tributaries such as the Clear River and Hines Creek, and on the eroded areas of Kleskun Hill. The plains skipper and coral hairstreak were found in upland areas of native grassland as well as on gently sloping native hillsides. Additional, more intensive surveys are required to address population size and detailed habitat use.

Recommendations/Future Direction

The disjunct butterfly populations of the Peace River Parkland Natural Subregion are closely tied to native grassland habitats, largely because of their dependence on specific host plants used by their larvae and their requirements for nectaring and mate-finding sites. Colonization of habitat fragments is likely dependent on fragment size and distance from the population core. Butterfly populations fluctuate considerably from year to year and this has implications for long-term management. The absence of a particular species at a site one year does not necessarily mean that the site is not suitable. Very little native grassland in the Peace River Parkland is protected and there are no standardized management practices for native rangelands under provincial jurisdiction.

Initial findings from this survey indicate the need for the following:

- 1) Enhanced land management and habitat protection strategies for native grasslands in the Peace River Parkland Subregion;
- 2) Implementation of annual transect surveying;
- 3) Clarification of the taxonomy for the Peace River Parkland Subregion butterfly populations; and
- 4) Development of public education initiatives, including support for existing landowner habitat stewardship programs.

REGION:

Northwest Boreal

TARGET SPECIES:

Plains Skipper (*Hesperia assiniiboia*), Pike's Old World Swallowtail (*Papilio machaon pikei*), Coral Hairstreak (*Satyrus titus*), Striped Hairstreak (*Satyrus liparops*), Northern Checkerspot (*Chlosyne palla*), Gorgone Checkerspot (*Chlosyne gorgone*), Alberta Arctic (*Oeneis alberta*), Uhler's Arctic (*Oeneis uhleri varuna*)

WILDLIFE ACT CATEGORY:

None

PROVINCIAL GENERAL STATUS:

Sensitive only:

Sensitive: Old World Swallowtail, Gorgone Checkerspot, Alberta Arctic

Undetermined: Striped Hairstreak

Secure: Plains Skipper, Coral Hairstreak, Northern Checkerspot, Uhler's Arctic

COOPERATING AGENCIES

Alberta Conservation Association, Peace Parkland Naturalists

For more information contact:

Tara Szkorupa (see page 7) and see Species at Risk Report No. 47, Survey of native grassland butterflies in the Peace parkland region of northwestern Alberta—2001.

POPULATION SURVEY OF AQUATIC MOLLUSCS IN ALBERTA'S CENTRAL PARKLAND NATURAL SUBREGION

Project Supervisor: **Dave Prescott**

REGION:
Parkland

TARGET SPECIES:
Aquatic Molluscs

WILDLIFE ACT CATEGORY:
None

PROVINCIAL GENERAL STATUS:
In Preparation

Purpose

To establish the distribution and relative abundance of many species of aquatic molluscs in Alberta's Central Parkland Natural Subregion, for use in the general status assessment process.

Background

One group of ecologically important organisms that has been largely overlooked in Alberta is the aquatic molluscs (bivalves and gastropods). Both bivalves and gastropods are widely distributed and relatively common in a variety of lentic and lotic wetland habitats in Alberta. Molluscs form an important food source for many semi-aquatic and terrestrial organisms and are also intermediate hosts for a variety of fish and waterfowl parasites. In addition, many gastropods are filter feeders and toxic substances can concentrate in their tissues. This, along with their sensitivity to hydrological regimes (e.g., oxygen content, nutrients, temperature), makes them excellent bio-indicators of environmental health in landscapes influenced by activities such as pulp mills, irrigation and hydroelectric dams, deforestation and agriculture.

Despite their importance in wetland systems, the only significant work on aquatic molluscs to date has been that of Clarke (1973), who spent parts of three field seasons collecting specimens at 87 stations in Alberta. As a result of this work, 28 species of bivalves and 50 species of aquatic gastropods have been identified in Alberta, with the vast majority of these occurring in the Central Parkland Natural Subregion. Many of these species, however, are known only from a very few sites, and information on most species is too limited to accurately determine their range, habitat requirements and biological status.

This project consists of a large-scale inventory of bivalves and aquatic gastropods from a wide variety of water bodies in the Central Parkland Natural Subregion of Alberta. The work will be only the second effort to characterize aquatic mollusc populations over a large area of Alberta, and will build upon previous work by providing an increased sampling effort and relating the distribution of species to the chemistry and physical attributes of wetlands.

Methods

During the summer of 2001, 196 sites were sampled for aquatic molluscs. Most of these samples were collected between 14 July and 5 September. To ensure that certain areas were not over-represented while others remained

unsampled, a stratified approach to sampling was adopted. A concerted effort was made to ensure that a creek, lake and wetland were sampled within the area represented by each 1:50 000 map sheet. In more easterly areas, an alkaline wetland was also sampled within each map sheet area. The entire Central Parkland Natural Subregion was surveyed in this manner. Sampling methods used at each site were dependent primarily upon wetland type, size and depth. They included: 1) use of an Eckman dredge in deep waters or off bridges; 2) sweeping with hand-nets off lake and river bottoms; and 3) sweeping with hand-nets through emergent vegetation. Sampling continued until it was deemed a representative sample had been collected. Attributes recorded at each site included date, surveyor, site id, water body type (lake, river, wetland), modifier (alkali wetland, Ducks Unlimited property, reservoir), location name, latitude, longitude, conductivity, pH, sample depth range, flow rate, sampling technique and sampling effort.

Results

Of the 196 sites sampled, 66 were classified as lakes, 65 as wetlands, 32 as rivers and 44 as creeks. Several sites were classified in more than one water body type category. Molluscs were not observed at 10 sites (generally alkali wetlands). All field data were entered into a spreadsheet and checked for accuracy and completeness. All mollusc samples collected were cleaned, and a reference collection of identified molluscs has been started to aid in future mollusc identification. Funds are being sought to enable completion of the identification of collected samples.

Recommendations/Future Direction

Once samples are identified, a final report will be prepared for this project.

COOPERATING AGENCIES

Alberta Conservation
Association, Alberta North
American Waterfowl
Management Plan, Ducks
Unlimited Canada

For more
information contact:

Dave Prescott (see page 7).

mammals

CROWSNEST GRIZZLY LINKAGE STUDY

Project Supervisor: **Richard Quinlan**
Project Researcher: **Cheryl Chetkiewicz**

purpose

To determine the effectiveness of the Crowsnest Pass as a linkage corridor for grizzly bears and cougars.

Background

The grizzly bear experienced a major range reduction and decline in numbers with the settlement and development of Alberta. However, population levels may have been increasing steadily on public land since the late 1980s. This species is currently under a very restrictive sport hunting regime in the province.

Threats to grizzly bears include increased contact with people through development and recreational activities. However, the greatest threat is loss and degradation of wilderness habitats through resource extraction and recreational development.

The Crowsnest Pass has been identified by the Rocky Mountain Grizzly Planning Committee as a critical continental linkage for grizzly bears, in jeopardy of being lost. It is imperative to assess the habitat use within, and the effectiveness of, identified movement corridors for large carnivores, including grizzly bear and cougar, in order to direct habitat protection and land acquisition initiatives.

Methods

During 2000, a University of Alberta PhD student prepared a study design that included Global Positioning System (GPS) collaring of grizzlies and cougars and development of resource selection function models. Fieldwork began in 2001.

Results

A literature review was completed in 2000 and focussed on carnivore biology and conservation, responses of grizzly bears and cougars to human activities, and wildlife corridors for bears and cougars. A detailed proposal for assessing the location and utility of wildlife corridors for grizzly bears and cougars in the Crowsnest Pass was also developed. Compilation of literature and a review of occurrence reports were carried out in 2001. Five cougars were captured and fitted with GPS collars. Collaring of grizzly bears was deferred to 2002.

Recommendations/Future Direction

Data on resource selection and movement patterns of grizzly bears and cougars in the Crowsnest Pass will be collected through the collaring of five individuals of each species with GPS units, in the study area. An index of potential ungulate prey density for the study area will be determined through the compilation of existing distribution and survey data for elk and bighorn sheep in the Crowsnest Pass. Spatially explicit habitat and movement models will be developed to map the probability of occurrence of grizzly bears and cougars given current landscape conditions. Confirmation of movement corridors for carnivores will allow for mitigation of a proposed highway twinning project and residential and recreational developments.

REGION:

Prairie

TARGET SPECIES:

Grizzly Bear (*Ursus arctos*)

WILDLIFE ACT CATEGORY:

Big Game
(ESCC Recommendation: Threatened)

PROVINCIAL GENERAL STATUS:

May Be At Risk

COOPERATING AGENCIES

Alberta Conservation Association, Wilburforce Foundation, Wildlife Conservation Society, Northstar Energy, University of Alberta

For more information contact:

Richard Quinlan (see page 7) and see Species at Risk Report No. 50, Carnivores and corridors in the Crowsnest Pass.



grizzly bear

DISTRIBUTION SURVEYS FOR ORD'S KANGAROO RATS

Project Supervisor: **Arlen Todd**
Project Researcher: **David Gummer** (Provincial Museum of Alberta)

REGION:

Provincial (conducted in Bow)

TARGET SPECIES:

Ord's Kangaroo Rat (*Dipodomys ordii*)

WILDLIFE ACT CATEGORY:

Non-game Animal

(ESCC Recommendation:

Endangered—recommendation approved and Wildlife Regulation amended June 2002.)

PROVINCIAL GENERAL STATUS:

May Be At Risk

Purpose

To conduct targeted field surveys for Ord's kangaroo rats in three locations where they are suspected to occur and where there appears to be appropriate habitat, but for which there are no documented records.

Background

Ord's kangaroo rats are known to occur in the Middle Sand Hills of southeastern Alberta, which include part of Canadian Forces Base (CFB) Suffield and neighbouring areas between the South Saskatchewan and Red Deer rivers. The known range of the Alberta population of kangaroo rats is approximately 1300 km². Although Ord's kangaroo rats in Alberta are presumably connected with neighbouring populations in Saskatchewan, the northern population across both provinces appears to be geographically isolated from the nearest southern conspecifics (in Montana) by at least 350 km.

Ord's kangaroo rats are small, nocturnal rodents that are unfamiliar to the public. Furthermore, generalized mammal trapping and other multi-species sampling approaches do not adequately detect kangaroo rats. Given the small geographic range and isolation of Ord's kangaroo rats in Alberta from more southern conspecifics, it is important to conduct specialized, targeted surveys of areas in which kangaroo rat occurrence might have significant implications for current knowledge and conservation of the Alberta population.

Sparsely vegetated sand hills in the vicinities of Hilda, Manyberries and Purple Springs were identified as key areas that needed to be more thoroughly surveyed with specialized methods for detecting kangaroo rats. Discovery of kangaroo rats in any of these areas would be significant because it could potentially reduce the apparent geographic isolation of the northern population.

Methods

Reconnaissance surveys were conducted during daytime hours to establish landowner contacts and to locate potential habitats, conspicuous burrows/footprints, and a stratified random sample of transects (exported from a geographic information system). Nighttime surveys of selected and random habitats were conducted during the darkest phase of the moon, to maximize the odds of detecting kangaroo rats. Surveys at night entailed two

observers scanning with spotlights for kangaroo rats or conspicuous burrows in open, sandy-soiled habitats. Transects were searched by walking 250 m in a random direction from the start point, recording any burrows or kangaroo rats that were observed. Two people could effectively survey transects that were 40 m in width (10 m on either side of each observer).

Kangaroo rats were caught by hand and marked with a numbered ear tag. Sex, age, mass, reproductive status, presence/absence of ectoparasites, and ear tag number were recorded for each kangaroo rat that was captured. All observations of kangaroo rats (and other incidental sightings of rare or at-risk species) were georeferenced using a handheld Global Positioning System (GPS) unit and subsequently entered into the Biodiversity/Species Observation Database (BSOD).

Results

Distribution surveys were conducted on 55 nights from 22 May to 25 August 2001. A total length of 4320 km of roads, trails and fireguards were surveyed by vehicle, and 95 random transects (23.75 km total) were surveyed on foot among the three priority areas (Hilda, Manyberries and Purple Springs).

Kangaroo rats were not discovered at any locations that were particularly distant from the Middle Sand Hills. However, kangaroo rats were discovered in one new, nearby site north of Hilda (Township 20, Range 1, W4), where 11 kangaroo rats were caught. These captures are noteworthy because they are the first documented records of kangaroo rats on the south side of the South Saskatchewan River in Alberta. There is presumably little or no dispersal, and ultimately gene flow, between kangaroo rats on opposite sides of the river, but the newfound population is probably highly connected with Ord's kangaroo rats in Saskatchewan. The newly discovered Alberta population occurred in a sandy-soiled, annual crop field, situated in relatively close proximity to brightly illuminated gas refineries between the towns of Hilda and Empress.

Field personnel also counted 175 kangaroo rats in the Middle Sand Hills during 2001 (Bindloss, CFB Suffield, Empress), incidental to field training, while travelling between study sites and collaborating with other field staff. These records assisted with definition of the current distribution of kangaroo rats in that core area during 2001.

Nighttime field surveys also provided 595 incidental observations of other species, including many rare or at-risk species. Other species observed included the olive-backed pocket mouse, northern grasshopper mouse, Great Plains toad, prairie rattlesnake, burrowing owl, and common poorwill. Interestingly, the olive-backed pocket mouse was the most commonly observed animal during nighttime surveys ($n = 66$), despite the species' reputation as being relatively rare in Alberta.

Recommendations/Future Direction

This project reaffirmed that Ord's kangaroo rats have an extremely restricted geographic distribution in Alberta and are not geographically connected to more southern populations. Kangaroo rats were discovered on the south side of the South Saskatchewan River, north of Hilda, but they were not found as far south as other, previously known kangaroo rat populations on the opposite side of the river in CFB Suffield. This improved knowledge of the current distribution of kangaroo rats in Alberta is an important prerequisite for future kangaroo rat conservation and management efforts.



COOPERATING AGENCIES

Provincial Museum of Alberta

For more
information contact:

Arlen Todd (see page 7) or **David Gummer** (David.Gummer@gov.ab.ca) and see Species at Risk Report (in prep.), Distribution surveys for Ord's kangaroo rats.

TESTING METHODS FOR WOLVERINE DETECTION TO ASSESS CONSERVATION STATUS

Project Supervisors: **Matt Besko, Lisa Wilkinson**

REGION:

Provincial (conducted in Northeast Boreal)

TARGET SPECIES:

Wolverine (*Gulo gulo*)

WILDLIFE ACT CATEGORY:

Fur-Bearing Animal
(ESCC Recommendation: Data Deficient)

PROVINCIAL GENERAL STATUS:

May Be At Risk

purpose

To gather data on wolverine population size and trends in Alberta by developing, testing and implementing techniques for surveying wolverine in boreal environments.

Background

Although population data are limited, both anecdotal evidence and empirical analysis of provincial trapping records suggest that wolverine distribution and population size have declined in Alberta. Wolverines typically maintain large home ranges and occur in low density in the province, making data collection on population size or trends very difficult. The most effective techniques for estimating population size are live trapping, genetic sampling and perhaps sampling using remote cameras (Mowat 2001). These methods would be costly to implement and are not expected to work well for wolverine in Alberta because of the low-density population.

Estimating population size for an area with a statistically defensible sample of wolverines (50 or more) would allow managers to compare recent harvest to the population size and to assess whether the harvest is sustainable. Trend information for both relative abundance and distribution would allow managers to accurately assess the status of the wolverine, and to apply management or conservation plans appropriate for the species and its habitat. Given the difficulty in measuring population size and trend, assessment of wolverine status in low to low/moderate density areas will likely rest on the comparison of current distribution to historical distribution.

Methods

The province was stratified into low-, moderate- and high-density wolverine sampling zones, based on historical trapping records. A linear transect method was tested in the low and moderate strata to determine presence/absence and, consequently, distribution over time. The protocol consisted of detecting and identifying furbearer tracks along a fixed

linear survey route during the winter.

Snowmobiles were used, and a 25-km transect was sampled during each working day (Mowat 2002). The study area was in the Northeast Boreal Region, primarily near Athabasca and Lac La Biche. Later, the team sampled north of Lac La Biche between Fort McKay and Fort McMurray. Open seismic lines and inactive logging roads were used as survey routes. Wolverine tracks were identified, photographed and mapped using a Global Positioning System (GPS) unit. Stride and track data were recorded and compiled on field data forms. Other furbearer species were identified and noted as well.

The sampling plan for the high-density zone (Northwest Boreal Region) is to use permanent hair sampling stations in conjunction with other techniques (e.g., track counts), with fieldwork planned for February 2003. Trends in relative abundance and distribution would be evident provided the sampling was sustained over a reasonable number of seasons, and if an adequate sample size was obtained.

Results

The protocol for linear transect sampling was field-tested in February 2002. More than 140 km of transects were sampled throughout the southern portion of the region. Lack of



snowfall during most of the sampling period prevented extensive sampling in more suitable habitats in the north. Wolverine tracks were not detected in the southern portion of the region; however, this was expected given the lack of trapping records in this area. These areas were also sampled for tracks by researchers from the University of Alberta, using a triangular transect method. Each side of the triangle was 3 km in length, with a total of 9 km being sampled in each township. However, this method may not have been sufficient to detect a wide-ranging carnivore like wolverine, and a comparative method using longer transects over a wider area should be tested.

Snowfall on the last two days of the survey period enabled northern transects to be sampled using the linear transect method. Wolverine trapping records had indicated a low/moderate population of individuals in the northern part of the study area. Two wolverine tracks were detected on two transects which represented over 50 km of sampled line.

Recommendations/Future Direction

Additional testing of the linear transect and hair sampling methods should be conducted to assess their effectiveness for detecting wolverine. Lack of adequate sampling conditions prevented sufficient sampling intensity to rigorously test this method during March 2002. Given the relative homogeneity of northern boreal topography, it is very difficult to design an effective inventory program to sample a low-density, wide-ranging species such as wolverine without a logistically expensive and intensive effort. However, preliminary results show that the linear transect method is successful in detecting wolverine in boreal environments. Essentially, a full-scale sampling effort employing both track surveys and hair sampling should be applied in high and moderate density strata over the entire province over a 3-5 year period in order to adequately assess population size and trend in distribution.

COOPERATING AGENCIES

University of Alberta

For more
information contact:

Matt Besko (see page 7).

WOODLAND CARIBOU HABITAT MAPPING IN NORTHEASTERN ALBERTA USING SATELLITE IMAGERY— CONTINUATION, REFINEMENT AND SUPPLEMENTATION OF 2001 PROJECT

Project Supervisors: John Martin, Matt Besko, George Hamilton

REGION:

Northeast Boreal

TARGET SPECIES:

Woodland Caribou (*Rangifer tarandus caribou*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk

purpose

To develop and apply efficient and effective methods to interpret, classify and map caribou habitat from satellite imagery (Landsat™).

Background

The project was initiated in 1999-2000 in response to several identified issues:

- 1) Extensive industrial development in the Northeast Boreal Region (energy, forestry, peat extraction).
- 2) Growing focus on cumulative effects assessment.
- 3) Call for revision of caribou range maps and guidelines, including range-specific management.

Initial work tested whether there was a usable correlation between caribou locations (obtained from caribou fitted with Global Positioning System [GPS] collars) and satellite image characteristics from Landsat Thematic Mapper™. The Wabasca area was selected as the test area, given the presence of GPS-collared caribou and an extensive database. Results were very promising, and should result in a scientific journal publication.

In 2000-2001, work was expanded to include caribou with Very High Frequency (VHF) collars in Wabasca and the Cold Lake Air Weapons Range (CLAWR) to evaluate if the process could be validated using less-precise information over a broader geographic range. The results were strongly supportive in the Wabasca region. In the CLAWR, the results were less clear, indicating a requirement for an altered strategy for mapping caribou habitat over a larger (regional) area. Identified research needs were:

- 1) Map and interpret burned areas, with respect to caribou habitat potential.
- 2) Assess caribou utilization of jack pine habitats (very few in the Wabasca area).
- 3) Develop a method for mapping areas without collared caribou.

The third year (2001-2002) of the project was developed to address these needs. However, as a result of limited and delayed funding, only the third identified research component was addressed in detail.

Funding during the three years was secured from various sources, including the Department's contingency fund, the Species at

Risk Program, the Boreal Caribou Committee and the Department's Regional Sustainable Development Strategy.

Methods

The creation of an acceptable Landsat "mosaic" proved to be very problematic because of the lack of availability of images acquired under similar atmospheric, seasonal and moisture conditions. As a result, a modified approach was adopted. Three Landsat images were used to cover an area of interest for this study. Each image was approximately 185 km x 185 km, with a significant amount of overlap between images. The images were atmospherically corrected using ATCOR (Erdas Imagine), which allows for consistent comparison between different scenes. The Wabasca image contained the greatest amount of caribou location information and was used as the template for training or classifying the remaining scenes.

Four analytical approaches were tested. Data sets were created from three data transformations: Tasseled Cap, Normalized Difference Vegetation Index (NDVI) and Principal Components Analysis, as well as the original Landsat Bands 4, 3 and 2. Each of these data sets was used to generate a 25-class unsupervised classification for the Wabasca scene. Caribou utilization was expressed as a percentage of data points occurring in each class, and compared to the availability of that class within the scene. Utilization was calculated and each class was assigned a ranking of preferred, neutral or avoided.

Results

It was found that the Tasseled Cap transformation provided the strongest correlation between caribou habitat utilization and spectral class within the study area. When the transformation was applied across different scenes, it was clear that the spectral classes identified in one Landsat image were the same classes identified on an adjacent image. Therefore, results from the Wabasca study area could be extrapolated to other areas to predict caribou habitat. It should be emphasized that these positive results apply only to peatland

habitats. There has not been an opportunity to evaluate this procedure with jack pine habitats. There is very little jack pine in the Wabasca study area, and few collared caribou in jack pine habitat types in the Northeast Boreal Region.

MODIS™ satellite imagery was also used in the analysis; however, there has not been sufficient time to explore an actual MODIS scene in detail. Preliminary evaluation based solely on spatial resolution (pixel size) suggests that the coarse resolution of this sensor (250 m and up) could be problematic, for two reasons:

- 1) Anthropogenic influences (roads, etc.) become less distinguishable as spatial resolution becomes coarser. Predictive ability is diminished because the influence of roads and other features cannot be separated out.
- 2) As pixel size increases, the distinction between preferred and avoided habitat progressively disappears (since more and more of the pixels will be selected). The solution to this problem appears to be to include all the location information, so that the number of times a pixel is used is the quantity of most interest.

Recommendations/Future Direction

Priorities for future work include:

- 1) Find ways of validating the predictive model developed thus far, perhaps by testing it in new areas having collared caribou, or by collaring caribou in new areas, and by manually examining the current Landsat predictions to determine areas of likely error.
- 2) Find ways of including jack pine in the model (e.g., examine Alberta Ground Cover Classification (AGCC) and Alberta Vegetation Inventory (AVI), or collar animals in jack pine habitats).
- 3) Examine the Peatland Inventory information, to evaluate the extent to which it can enable interpretation or predictive ability.
- 4) Further assess the application of MODIS.



woodland caribou

COOPERATING AGENCIES

University of Alberta, Alberta
Sustainable Resource
Development—Land and
Forest Division, Boreal Caribou
Committee

For more
information contact:

John Martin (John.Martin@gov.ab.ca)
or Matt Besko (see page 7).

WOODLAND CARIBOU POPULATION MONITORING IN THE SLAVE LAKE AND CHINCHAGA RANGES

Project Supervisor: Adam James

REGION:

Provincial (conducted in
Northwest Boreal)

TARGET SPECIES:

Woodland Caribou (*Rangifer
tarandus caribou*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk

purpose

To collect baseline population trend information for woodland caribou in the Slave Lake and Chinchaga ranges.

Background

Woodland caribou were listed as a *Threatened* species in Alberta in 1984, and in June 2001 the Endangered Species Conservation Committee (ESCC) recommended that they continue to be identified as *Threatened* under the *Wildlife Act*. The ESCC also recommended several initial conservation actions that should be implemented pending the development of an Alberta recovery plan. One of these was to obtain better information on the caribou in the Slave Lake and Chinchaga ranges.

Currently, the only viable means to track caribou population trends in northern Alberta is to collect information on calf recruitment and adult survival rates. This requires collaring caribou with radio transmitters. The goal of this project was to deploy radio transmitters in the Slave Lake and Chinchaga ranges to begin an assessment of adult survival, and to complete calf recruitment surveys in March 2002.

Methods

Fixed-wing aircraft were used to search for caribou in both the Slave Lake and Chinchaga ranges. Once caribou were located, a capture crew was dispatched to the area to catch individuals using a net-gun fired from a helicopter. The capture crew fitted each caribou with a radio-collar and collected hair, fecal and blood samples for DNA, diet analysis and pregnancy testing, respectively.

Several weeks after the capture work was completed, aerial surveys were initiated in both ranges to count as many adult and calf caribou as possible, with areas chosen based on the distribution of radio-collared animals. This information was summarized as the number of calves per 100 cows and represents the best estimate of calf recruitment currently available.

Results

In total, nine caribou were collared in the Slave Lake range; however, because the capture crew was unable to find a sufficient number of females, four of the collars were placed on males. Twenty collars were deployed in the Chinchaga range (16 female, 4 male). These two ranges will now be added to five other boreal ranges being monitored in northern Alberta.

Calf surveys were completed for both ranges; however, the total sample sizes were small. Typically, totals of 100 to 200 caribou have been observed during calf surveys in the five ranges that have been monitored in the past. Only 52 and 55 caribou were observed in the Slave Lake and Chinchaga surveys, respectively. In the Slave Lake range, 23 cows and 12 calves were observed, giving a recruitment estimate of 52 calves per 100 cows. In the Chinchaga range, 29 cows and 10 calves were observed, giving a recruitment estimate of 34 calves per 100 cows. Although these numbers are high relative to historical recruitment rates observed in other ranges, confidence in the estimates is diminished by the small sample sizes.

Recommendations/Future Direction

Ongoing population monitoring is required in these ranges to gain an understanding of population trends. For monitoring efforts to be successful, additional capture work will be required in 2002-2003 to increase the number of radio-collared females in the Slave Lake range and to replace any collars lost to mortalities over the course of the year in both ranges. However, population monitoring alone will not conserve woodland caribou. The continued decline of Alberta's caribou populations indicates that current management guidelines and actions should be modified to ensure caribou survival. On public land, and for government-regulated activities (e.g., environmental impact assessments, forest management, linear disturbances), government land use management systems should be examined, and adjusted as required to ensure that the needs of this species are addressed in land use decisions and approvals. Interested stakeholders (e.g., forestry and oil and gas industries) should be invited to assist in the design and implementation of effective interim management programs. Potentially conflicting government policy and programs need to be addressed and harmonized.

COOPERATING AGENCIES

Boreal Caribou Committee,
Alberta Conservation
Association

For more
information contact:

Tara Szkorupa (see page 7).

WOODLAND CARIBOU RANGE RECOVERY IN ALBERTA, 2001-2002 PILOT YEAR

Project Supervisor: **Tara Szkorupa**

Purpose

To speed the recovery of linear disturbances (roads, seismic lines and pipelines), so that their negative effects on woodland caribou, and other sensitive wildlife species, are reduced and eventually eliminated.

Background

Woodland caribou are a *Threatened* species in Alberta, as designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and Alberta's *Wildlife Act*. Most caribou populations are declining, and research in Alberta has clearly shown that caribou avoid areas adjacent to seismic lines and roads. This avoidance reduces the availability and effectiveness of habitat in caribou ranges. Caribou were also found to cross roads less frequently than expected, implying a barrier effect. Research has shown that wolves, the main predator of caribou, seek out and travel faster along corridors than in adjacent habitat, and kill caribou near these lines.

The effects of linear disturbances on wildlife have also been widely documented. Roads, pipelines and seismic lines enable humans to easily access otherwise remote areas, which can lead to increased levels of hunting, poaching and trapping. Linear developments can result in direct habitat loss when habitat is made unsuitable. Indirect habitat loss can occur if wildlife avoid otherwise suitable habitat near development. Up to 85% of some caribou ranges in Alberta are within 250 m of a linear disturbance. Natural recovery of linear disturbances has been very slow in most caribou ranges. Actions taken to reduce access and encourage vegetative regrowth are needed and will benefit a number of wildlife species in addition to caribou. Species that require large areas of relatively undisturbed habitat, such as grizzly bear, wolverine and bull trout, will also benefit from habitat conservation activities for caribou.

Methods

Substantial planning was required before work to recover linear disturbances could begin. Three highly affected project areas were chosen: Little Smoky, Stony Mountain and Red Earth. Local planning teams were set up for each area, with representatives from the Fish and Wildlife Division, Land and Forest Division, oil and gas companies, timber companies and the University of Alberta. A project manager was hired to

coordinate the project and all three planning teams.

Local planning teams held regular meetings (about once per month) to choose general areas for restoration work, gather information about specific linear disturbances, choose specific developments for restoration work, decide on types of restoration activities (e.g., tree planting or mounding), and plan for monitoring the effects of restoration work. Pre-treatment information was collected prior to treatment application for all of the target areas (e.g., vegetation on line, slope/aspect, adjacent vegetation, human/animal/vehicle use).

Results

Red Earth

Approximately 25 km of linear disturbances near caribou habitat were chosen. Fast growing trees and shrubs found adjacent to linear disturbances were transplanted in plots. The plots were marked and mapped so that their regrowth progress can be evaluated. Linear disturbances in muskeg areas were mounded at freeze-up, creating higher ground to encourage revegetation. A combination of treatments will be applied to the prepared mounds in spring 2002, including seeding, planting (with different native tree species), transplanting spruce and applying peat moss.

Little Smoky

Post-harvest assessment contractors were hired to conduct a detailed inventory of the linear disturbances in key caribou areas, and to suggest restoration activities (e.g., stocking options for tree planting, opportunities for mounding). These contractors attended planning meetings to become familiar with the project goals. Over 10 000 trees were planted along 20 km of road and pipeline. Mounding of soil and reduction of soil compaction (required for natural revegetation) occurred in the fall and early winter.

Stony Mountain

Linear corridors were selected for restoration, and were inventoried, prioritized and mapped.

REGION:

Provincial (conducted in Northwest Boreal, Northeast Boreal)

TARGET SPECIES:

Woodland Caribou (*Rangifer tarandus caribou*)

WILDLIFE ACT CATEGORY:

Threatened

PROVINCIAL GENERAL STATUS:

At Risk

Emphasis was placed on areas connecting upland to lowland sites used by caribou, including areas leading into the Stony Mountain Wildland Park. Access management, including consultation with local groups such as snowmobilers, was completed. Pre-treatment assessment and treatment prescriptions were completed. Restoration work will take place in the spring of 2002.

Recommendations/Future Direction

The project will be expanded in 2002 to cover additional project areas (foothills area) and initiate more large-scale restoration work. Planning teams are continuing to meet through the winter to ensure that planning is well underway before spring thaw (when activities like tree planting can begin). A research/monitoring component will be more clearly defined during the next year of the project. In Alberta, there are many caribou ranges with extensive linear disturbances that are recovering naturally at a slow pace. This project is expected to span several years, to ensure that a substantial impact is made on the habitat effectiveness of caribou ranges in the province.

COOPERATING AGENCIES

Alberta Energy Company,
Alberta Conservation
Association, Alberta Pacific
Forest Industries, Alberta
Sustainable Resource
Development—Land and
Forest Division, Ashton Mining
of Canada, Boreal Caribou
Committee, Can-Am
Geomatics, Canfor,
Government of Canada
Habitat Stewardship Program,
Gulf Canada (Conoco),
Northstar Energy, Petro-
Canada, Suncor Energy, The
Cadastral Group, University of
Alberta, West Central Alberta
Caribou Standing Committee

For more
information contact:

Tara Szkorupa (see page 7) and see
Species at Risk Report No. 48, Caribou
range recovery in Alberta: 2001/02
pilot year.

BAT INVENTORY OF NORTHEASTERN ALBERTA, 2001

Project Supervisors: **Anne Hubbs, Lisa Wilkinson, Robin Gutsell**

purpose

To conduct an inventory on bats in northern Alberta and provide status information.

Background

There is limited information on bat species' occurrence and distribution in northern Alberta. As part of an ongoing effort to complete an inventory of bats in northern Alberta, a reconnaissance survey was conducted in the Northeast Boreal Region in summer 2001. The Northwest Boreal was surveyed in 2000, and the Northern East Slopes is scheduled for 2002. It is important to gather data on bats not only to update status information, but also to provide data for management purposes. In particular, forest dwelling bats roost almost exclusively in wildlife trees (old trees or snags), so conserving bat habitat is beneficial to numerous species and should be considered in management plans.

The objectives of the study were to identify species' occurrences, possible range extensions and habitat associations; refine the protocol; and collect tissue samples for DNA analyses. DNA analysis will help to discriminate between morphologically similar species and provide information on genetic relatedness of populations.

Methods

Surveys were conducted at road- and trail-accessible sites throughout the region, and at La Butte Creek Wildland Park. Bats were captured in mist nets set across cutlines and trails and over small bodies of water, at 18 different sites. Unfortunately, poor weather conditions limited the number of sampling sites. Data recorded on captured bats included species,

sex, reproductive condition, age, mass and forearm length. Tissue samples were taken from the wing using a small hole punch and preserved in alcohol for future analysis. At each of the 18 sites, acoustic surveys were made with two bat detectors, set at different frequencies to detect all species present.

Results

Thirty-six bats were captured, representing three species. Little brown myotis (*Myotis lucifugus*) was the most common species captured ($n = 31$), followed by northern myotis ($n = 3$) and silver-haired bats (*Lasionycteris noctivagans*; $n = 2$).

Bat detector data indicate that some *Myotis* species (i.e., small species) were common, and that the larger *Myotis* species, as well as silver-haired, big brown (*Eptesicus fuscus*) and hoary bats (*Lasiurus cinereus*), were likely present throughout the region. Big brown and hoary bats are rarely captured in mist nets because they tend to forage above the tree canopy. There was considerable bat activity at the La Butte Creek study area, which is noteworthy given the northern latitude.

This study also confirmed the presence of a maternity colony of little brown myotis, which is the most northern known maternity colony in Alberta.

Recommendations/Future Direction

The inventory of northern Alberta should continue with a survey of the Northern East Slopes in 2002.

REGION:

Provincial (conducted in Northeast Boreal)

TARGET SPECIES:

Northern Myotis (*Myotis septentrionalis*), Long-legged Myotis (*Myotis volans*)

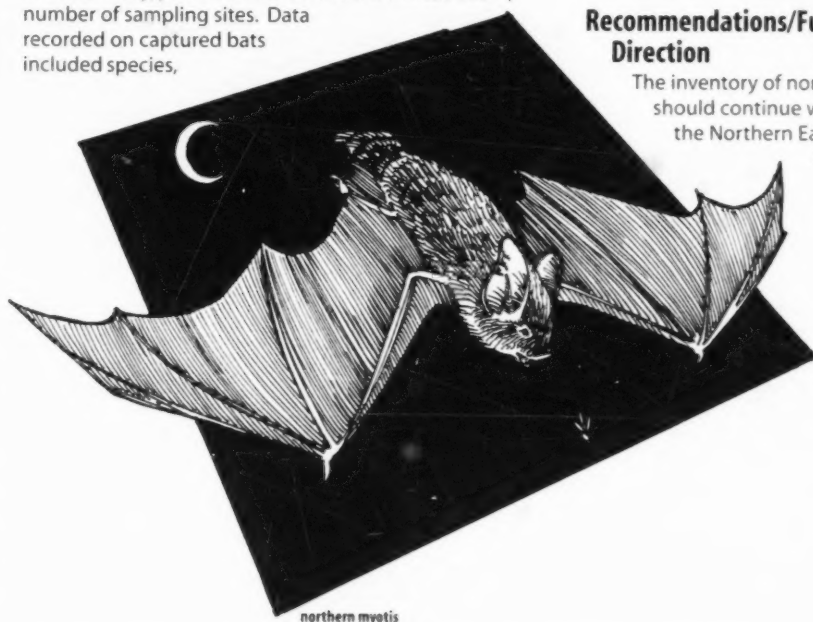
WILDLIFE ACT CATEGORY:

Non-licence Animals

PROVINCIAL GENERAL STATUS:

May Be At Risk: Northern Myotis

Undetermined: Long-legged Myotis



northern myotis

COOPERATING AGENCIES

Alberta Natural Heritage Information Centre, Provincial Museum of Alberta

For more information contact:

Lisa Wilkinson (see page 7) and see Species at Risk Report (in prep.), Survey of bats in northeastern Alberta.

COLLECTION AND ANALYSIS OF OWL PELLETS TO IMPROVE KNOWLEDGE OF DISTRIBUTION AND RELATIVE ABUNDANCE OF PRAIRIE AND PARKLAND SMALL MAMMALS

Project Supervisors: **Lance Engley** (ACA), **Dave Prescott**

REGION:

Provincial (conducted in Parkland, Bow, Prairie)

TARGET SPECIES:

Small Mammals

WILDLIFE ACT CATEGORY:

Varied—Non-game and Non-licence Animals

PROVINCIAL GENERAL STATUS:

Varied

purpose

To update the distribution and relative abundance of many species of small mammals in Alberta.

Background

The main prey of great horned owls is small mammals. Through analysis of owl pellets (regurgitated nondigestible prey remains), it is possible to establish ranges and relative abundance of many species of small mammals. This project builds on previous studies in grassland areas and expands to the entire Grassland Natural Region and Central Parkland Natural Subregion of Alberta.

Owl pellet analysis has proven to be a cost- and time-effective method for gathering data on small mammals, particularly those species for which traditional methods are not well suited. In previous studies conducted in southern Alberta, every large sample of pellets examined produced at least one new small mammal distribution record and valuable information on the relative abundance of species of management concern. This project gathers information about poorly understood species and provides population data for longer-term management plans for species of concern. Information may also be provided on species-specific habitat associations.

Methods

In the summer of 2000, great horned owl pellets were collected at abandoned buildings and opportunistically located nests and roosts throughout the Grassland Natural Region. In 2001, the Central Parkland Natural Subregion was targeted. Reconnaissance work was conducted in early spring to locate nest sites before tree leaf out. Nests were then revisited during the summer to collect owl pellets. Postings requesting information on possible nest locations or collected owl pellets were also placed in the Alberta Naturalist, Alberta Wildlifer, Buck for Wildlife Newsletter, Landowner Habitat Christmas Greeting and on the Alberta Conservation Association (ACA) website. Collection sites were geo-referenced, and pellets were dried and stored. All pellets are currently being analyzed for mammalian prey remains.

Results

In the Grassland Natural Region (2000), pellets were collected from 158 sites. Samples consisted of 1 to 50 pellets. All samples have been cleaned and 38 have been examined to identify prey remains. For analysis purposes, the Grassland Natural Region was divided into four quadrants; a summary report for the northeast quadrant is expected in September 2002. Several new distribution records for prairie vole, sagebrush vole and northern grasshopper mouse have been documented in this quadrant.

In the Central Parkland Natural Subregion (2001), collection of pellets proved to be much more difficult. After covering an estimated 8500 km in the spring, only 91 nest sites were identified. Owl pellets were obtained at 42 of these sites. Pellet samples were also substantially smaller than those collected in the Grasslands and averaged less than 10 pellets/site. Possible reasons why pellets were not found, or were scarce at identified sites, include the following: bird on nest was misidentified; owl observed did not successfully mate; nest was taken over by hawks; nest was destroyed; heavy undergrowth prevented pellets from being found; heavy foliage prevented nest from being found; and pellets were destroyed by weather. Twelve of the samples collected in 2001 have been dissected. Identification of the prey remains from these samples has not yet begun. Data will be entered into the Biodiversity/Species Observation Database (BSOD) as they become available. Pellet dissection and analysis should be completed by March 2003, dependent on available funding.

Recommendations/Future Direction

Upon completion of the analysis of the collected samples, management recommendations will be made. In 2002-2003, efforts will be directed toward finishing the analysis of pellets collected in the previous two years and writing up a report that summarizes this project.

COOPERATING AGENCIES

Alberta Conservation Association, Alberta Sport, Recreation, Parks and Wildlife Foundation, Notre Dame High School—Alberta Technology Preparation Program, Provincial Museum of Alberta

For more information contact:

Dave Prescott (see page 7) and see Schmelzeisen, R. (in prep.), Alberta small mammal distribution through the examination of owl pellets—progress report.

plants

WESTERN BLUE FLAG INVENTORY AND MANAGEMENT RECOMMENDATIONS

Project Supervisor: **Richard Quinlan**

purpose

To continue the inventory and monitoring of western blue flag populations and provide recommendations for management of the species in Alberta.

Background

In Canada, naturally occurring populations of western blue flag are restricted to the southwestern corner of Alberta. With few exceptions, western blue flag habitat is limited to the transitional zone between wet meadows and dry upland sites. The species appears to benefit from light to moderate grazing regimes, and has not been found in riparian zones or where overgrazing has occurred.

A decline in population size and numbers of populations, combined with a limited range and abundance in the province, led to the recommendation by the Endangered Species Conservation Committee (ESCC) that this species be listed as *Threatened* under Alberta's *Wildlife Act*. This recommendation was subsequently approved by the Minister of Sustainable Resource Development; however, new regulations for the protection of plant species must be developed before the listing process can be completed.

An inventory of naturally occurring populations was conducted in 2000, and two new sites were discovered. To facilitate the recovery process and provide sound population information to the Canada Western Blue Flag Maintenance/Recovery Team, the inventory and monitoring efforts were continued in 2001.

Methods

To census smaller sites, the perimeter of the site and major western blue flag clumps were first marked with flagging. The site was then walked in a systematic fashion and all western blue flag stems were counted. Flowering stems were counted separately. Similar methods were used on larger sites (i.e., the perimeter and major clumps were flagged), but transects were walked at 3 m intervals and all plants observed each side of transects were counted and recorded.

Following population assessments, site-specific as well as broader management recommendations were developed to enhance the maintenance of natural western blue flag populations.

Results

In 1989, the population of western blue flag was estimated as 7500 stems at six sites. A number of new sites were discovered in 2000 and 2001, and the 2001 population was estimated as 14 757 stems at 11 sites. Three of these sites have large stem counts ranging from 2000 to 6000 stems; the remaining sites are small with stem counts of less than 600. All sites are on private land, with the exception of one in Police Outpost Provincial Park.

Recommendations/Future Direction

Although new populations of western blue flag have been discovered, the species remains restricted in range, has specific habitat requirements, and the majority of known populations occur on private land. Conserving western blue flag habitat through landowner cooperation and involvement is critical to maintaining western blue flag populations in Alberta.

Many of the recommendations developed following the 2001 population assessments relate to future monitoring, as well as range management. The recommendations related to land use focused on site-specific as well as more inclusive issues. Some of the broader management recommendations included:

- 1) Grazing seems to be an important factor in maintaining viable western blue flag populations. Fall and winter grazing may be of greatest benefit to the plants as this is the grazing regime used at two sites where there are robust populations.
- 2) Landowners should be informed of opportunities for voluntary cooperative agreements to manage their western blue flag populations in a sustainable way.
- 3) There should be no cultivation or alteration of hydrological processes that would have a negative impact on western blue flag.
- 4) Use of chemicals or other control practices that would harm western blue flag should be avoided.
- 5) Haying activity should be designed to minimize impact to western blue flag.

REGION:
Provincial (conducted in Prairie)

TARGET SPECIES:
Western Blue Flag (*Iris missouriensis*)

WILDLIFE ACT CATEGORY:
None
(ESCC Recommendation: *Threatened*)

PROVINCIAL GENERAL STATUS:
In Preparation

COOPERATING AGENCIES

Alberta Conservation Association, Police Outpost Provincial Park, Government of Canada Habitat Stewardship Program, landowners in the Cardston area

For more information contact:

Richard Quinlan (see page 7) and see Species at Risk Report No. 38, A census and recommendations for management for western blue flag (*Iris missouriensis*) in Alberta.

PEACE PARKLAND NATIVE GRASSLANDS STEWARDSHIP PROGRAM

Project Supervisors: Adam James, Annette Baker (ACA)

REGION:

Northwest Boreal

TARGET SPECIES and SUBSPECIES:

Select Vascular Plants and Butterflies (see end of summary)

WILDLIFE ACT CATEGORY:

None

PROVINCIAL GENERAL STATUS (species only):

Varied (see end of summary)

purpose

To locate and conduct species inventories on native grassland sites in the Northwest Boreal Region and to enhance conservation of these sites through stewardship activities.

Background

Historically, native grasslands were extensive and contiguous within the Peace River Parkland Natural Subregion. During the early 1900s, between 539 200 and 1 365 400 ha of upland parkland in the Grande Prairie, Spirit River and Peace River/Fairview areas were documented, of which 75% to 85% was grassland. Land development since that time has fragmented the Peace River Parkland so that native grasslands are now confined to small remnant patches.

Fragmentation is recognized as the most serious threat to biological diversity within this area, and of Alberta's three Parkland subregions, the Peace River Parkland has undergone the most extensive alteration. Only 46 ha of native grassland on level or undulating land in the Grande Prairie area were documented in a recent report (Western Rangeland Consultants Inc. 1999). Remnant patches of native grassland are threatened by continued expansion of cultivation, grazing, urbanization and industry, encroachment by forests and shrublands due to fire suppression, and competition with non-native species from tame pastures and invasive weeds.

Native grasslands in the Peace River Parkland are dominated by native grass species, particularly wheat grasses (*Agropyron* spp.), western porcupine grass (*Stipa curisetia*), June grass (*Koeleria macrantha*) and intermediate oatgrass (*Danthonia intermedia*). A number of butterfly species are closely associated with these native grasslands, with the larvae of the plains skipper and Alberta arctic feeding predominantly on native grasses.

By focusing stewardship actions on these extremely rare communities, this project has high potential to conserve multiple species.

Methods

Potential sites were identified by reviewing historical literature and contacting local residents and government and nongovernmental agencies. Air photo interpretation, using the most recent available 1:30 000 stereo images, was tested as a method of locating potential native remnants. Ownership of sites was determined and landowners were contacted for permission to enter their land. They were also invited to accompany field staff during the inventory.

Field reconnaissance was used to verify whether potential sites were still native and to determine their condition. An initial inspection of the site (quarter section maximum) was conducted to record all plant species and a site description, and to select the most representative area for inventory. Any rare plant occurrences were recorded according to Alberta Natural Heritage Information Centre (ANHIC) guidelines. The plant community was described by assigning a Daubenmire cover class value (1 = 0-1% cover, 2 = 1-5%, 3 = 5-25%, 4 = 25-50%, 5 = 50-75%, 6 = 75-95%, 7 = 95-100%) to each plant species in each plot.

A range health evaluation protocol recently developed by Public Lands Division was used to determine the health status of each site included in the inventory. Assessment of range health included an examination of the following: the plant species on the site and whether they resembled the reference native plant community for the site (ecological status); community structure; hydrological function and nutrient cycling; site stability (natural and human-caused bare soil and erosion); and noxious weeds. Each category was scored and a final score and percentage were tabulated, after which the overall health was defined as: Healthy (75-100%); Healthy with problems (50-74%); and Unhealthy (<50%).

Butterfly surveys were conducted using the same methods as the Survey of Native Grassland Butterflies in the Peace Parkland Region of Northwestern Alberta—2001 summary (see page 45).

Results

Twenty-seven potential remnant grassland sites were identified in the Grande Prairie area through literature review, local contacts and government and nongovernmental sources. All of these sites were ground-truthed during 2001, resulting in confirmation of 17 actual native grassland sites. Ten sites were classed as non-native as they were either modified with non-native species (five sites), encroached upon by shrubs (three sites) or cultivated (one site), and one site was a wetland/sedge meadow plant community.

Air photo interpretation proved to be a valuable method for identifying potential native grassland

sites as small as 3-4 ha in size. Seventy-one new potential sites were identified, of which 49 were ground-truthed. Of these, 24 represented new native grassland sites and 25 sites were classed as non-native or outside the scope of this project. These sites were either modified with non-native species (eight sites), overgrazed to the point where native grasses no longer dominated (eight sites), wetland/sedge meadow plant communities (six sites), part of a sand dune/river slope community (two sites) or cultivated (one site).

Twelve potential sites were identified in the Fairview area using traditional methods. Seven sites were field inspected, four sites could not be accessed, and one was on a river slope and therefore was out of this project's scope, as these plant communities are considered to be less at risk. Of the seven sites that were field inspected, two were native grassland, three were modified by non-native species, one was a slope community, and one site was native but was not included as it was located in the Green Area.

Over 530 ha of remnant, native grassland were verified through field surveys. One hundred and seventy-eight grass, forb and shrub species were identified, with 150 species classified as native. Populations of leather grape fern, lilac-flowered beardtongue and Richardson needle grass were observed at a number of sites. Observations of all butterfly species of interest, except the gorgone checkerspot, were recorded. Range health of sites varied from Unhealthy to Healthy.

Recommendations/Future Direction

Data collected in the first year of this project clearly indicate that air photo interpretation is the most suitable method for identifying potential native grassland sites. Air photo interpretation for the pilot area will be completed for approximately 171 townships before the 2002 field season. This should greatly increase the number of potential native remnants to field check. The remainder of the Peace River Parkland Subregion in the White Area will be examined during the winter of 2002-2003.

The focus of the 2002 field season will be to complete the Grande Prairie and Fairview areas, and to initiate examination of the Spirit River area. Potential locations will be identified through air photo interpretation, which will be completed during spring 2002.

A short questionnaire to assess landowners' interest in conservation will be prepared to facilitate land stewardship efforts after the sites have been inspected. During the first year of this project, field staff had the opportunity to answer numerous landowner questions. A brochure will be developed, for distribution to landowners, partners and other interested persons, that addresses commonly asked questions, provides an overview of the program and outlines possible stewardship partners.

COOPERATING AGENCIES

Alberta Conservation Association, Alberta Sustainable Resource Development—Land and Forest Division, Alberta Sustainable Resource Development—Public Lands Division, Ducks Unlimited Canada, Government of Canada Habitat Stewardship Program, Peace Parkland Naturalists

TARGET SPECIES and SUBSPECIES:

Leather Grape Fern (*Botrychium multifidum*), Canadian Rice Grass (*Oryzopsis canadensis*), Hooker's Cinquefoil (*Potentilla hookeriana*), Pale Blue-eyed Grass (*Sisyrinchium septentrionale*), Herriot's Sagewort (*Artemisia tilesii*), Low Milkweed (*Asclepias ovalifolia*), White-scaled Sedge (*Carex xerantica*), California Oat Grass (*Danthonia californica*), Annual Willow-Herb (*Epilobium paniculatum*), Big-head Rush (*Juncus vaseyi*), Lilac-flowered Beardtongue (*Penstemon gracilis*), Richardson Needle Grass (*Stipa richardsonii*), Porcupine Grass (*Stipa spartea*), Carolina Wild Geranium (*Geranium carolinianum*)

Plains Skipper (*Hesperia assinioba*), Pike's Old World Swallowtail (*Papilio machaon pikei*), Coral Hairstreak (*Satyrus titus*), Striped Hairstreak (*Satyrus liparops*), Northern Checkerspot (*Chlosyne palla*), Gorgone Checkerspot (*Chlosyne gorgone*), Alberta Arctic (*Oeneis alberta*), Uhler's Arctic (*Oeneis uhleri varuna*)

PROVINCIAL GENERAL STATUS (species only):

May Be At Risk: Leather Grape Fern

Sensitive: Old World Swallowtail, Gorgone Checkerspot, Alberta Arctic

Undetermined: Striped Hairstreak

Secure: Plains Skipper, Coral Hairstreak, Northern Checkerspot, Uhler's Arctic

In Preparation: Canadian Rice Grass, Hooker's Cinquefoil, Pale Blue-eyed Grass, Herriot's Sagewort, Low Milkweed, White-scaled Sedge, California Oat Grass, Annual Willow-Herb, Big-head Rush, Lilac-flowered Beardtongue, Richardson Needle Grass, Porcupine Grass, Carolina Wild Geranium

For more information contact:

Tara Szkorupa (see page 7) or Annette Baker (Annette.Baker@gov.ab.ca) and see Species at Risk Report No. 49, Peace parkland native grassland stewardship program 2001/02.

SETTING PRIORITIES FOR VASCULAR PLANTS RECOMMENDED AS MAY BE AT RISK

Project Supervisors: **Gordon Court, Robin Gutsell, Sue Peters** (ACA)

REGION:

Provincial (conducted by Headquarters)

TARGET SPECIES:

Vascular plants recommended as *May Be At Risk*

WILDLIFE ACT CATEGORY:

None

PROVINCIAL GENERAL STATUS:

In Preparation

purpose

To set priorities for data collection for those vascular plants with a preliminary general status listing of *May Be At Risk* in Alberta.

Background

The general status exercise for 2000 resulted in a preliminary list of 424 vascular plant species recommended as *May Be At Risk* in Alberta. Species considered *May Be At Risk* require a detailed evaluation of their status in Alberta, which is the only way in which such species can be assessed by the Endangered Species Conservation Committee (ESCC) and potentially listed under the *Wildlife Act*. A detailed status report is the first step of the evaluation process. However, only a few of the vascular plant species recommended as *May Be At Risk* have the current population information or long-term trend information necessary for a detailed status report. A system was needed to select the highest priority species from the large number of potentially eligible vascular plants and to initiate inventories for chosen species.

Methods

The Scientific Subcommittee (SSC) of the ESCC developed a prioritization system that comprises three steps. First, points were assigned to each species for three quantitative criteria: global rarity (G rank), provincial rarity (S rank) and threats to the habitat and the population. The measures of global and provincial rarity were based on a system set up by the Nature Conservancy. "Threats" scores were determined in 2000 as part of the preliminary general status assessment conducted for each species. Equal weight was placed on each criterion, and each was scored from 1-10 points. The total points awarded to a species ranged from 3-28. An additive formula was used to rank each species to avoid magnifying uncertainty in any one of the criteria. The G rank was included to give priority to globally rare species and de-emphasize strictly peripheral species. By awarding more points to species that were both globally and provincially rare, species for which Alberta has a large responsibility would be a priority. Species with threats to the population and/or habitat were awarded more points, to give priority to species that will likely benefit from conservation efforts to prevent extinction or extirpation. This process resulted in a list of species within each taxon that highlighted globally and provincially rare species with threats to their population and/or habitat.

As the second step, the list of priority plant species was distributed to members of the SSC and botanists at the Alberta Natural Heritage Information Centre (ANHIC), who checked for species that may have been overlooked, solely based on quantitative criteria. The last step, which is currently being implemented, is to choose species for data collection based on criteria such as practical and logistical issues related to fieldwork.

Results

The locations of the highest priority vascular plants across Alberta were mapped, and seven groupings ("hotspots") were selected to begin the process of planning for fieldwork. Since the southwest corner of Alberta contains the largest number of high priority plants, this is the first hotspot for which a fieldwork plan has been developed. Fourteen target species representing major habitat types within the hotspot have been recommended for data collection. Target species were chosen based on a number of factors, including their high priority ranks (indicating that they are relatively rare and threatened), restricted distribution, overlapping distribution and flowering time with other priority species, ease of identification in the field, and accessibility to sites where they occur. Consideration was also given to the quantity of data already available for each species.

Recommendations/Future Direction

A subset of the 14 target species will be chosen for fieldwork in 2002, pending funding availability. In the next few years, fieldwork plans will be drawn up for more of the plant hotspots so that fieldwork on high priority *May Be At Risk* vascular plants can be initiated in different parts of Alberta.

COOPERATING AGENCIES

Canadian Wildlife Service,
Alberta Natural Heritage
Information Centre

For more
information contact:

Robin Gutsell (see page 7) or
Sue Peters (Sue.Peters@gov.ab.ca).

INVENTORY OF PRIORITY PLANT SPECIES IN THE FOOTHILLS FESCUE NATURAL SUBREGION

Project Supervisors: **Robin Gutsell, Sue Peters** (ACA)

purpose

To conduct an inventory of selected priority vascular plant species that occur in the Foothills Fescue Natural Subregion and to determine their detailed status.

Background

Detailed status reports are the only means by which plants that may be at risk can be assessed by the Endangered Species Conservation Committee (ESCC) and potentially listed under the *Wildlife Act*. In 1997, Alberta's *Wildlife Act* was amended to allow for the designation, protection and recovery of *Threatened* and *Endangered* plants.

In order to collect the information necessary to carry out a detailed status assessment of selected *May Be At Risk* plants in the Grassland Natural Region, a strategy for surveying and monitoring these species was developed in 2000. The surveys conducted in 2001 were the first of a multi-year work plan that identified inventory priorities for plant species of conservation concern in the Grassland Natural Region. Species were prioritized primarily by their provincial and global rarity and the level of threats to their population and habitat (see page 62).

In 2001, surveys of the twelve priority vascular plant species were conducted in the Foothills Fescue Natural Subregion (of the Grassland Natural Region) and focused on habitats associated with wetlands. The Foothills Fescue Natural Subregion forms a narrow band west of the Mixedgrass Natural Subregion, stretching from north of Calgary south to the Alberta-Montana border.

Methods

All known locations of each selected species were surveyed in 2001, and potential habitat was searched for new populations. These areas were searched using a grid pattern to ensure representative coverage of the Foothills Fescue Natural Subregion. The goal was to survey across the region in approximately parallel lines that were 10 km to 15 km apart. The spacing between lines was closer in areas with abundant natural habitat and a higher probability of encountering the species of interest. In extensively human-modified landscapes (e.g., the northeastern portion of the subregion) where there was a low probability of encountering the target species, the spacing was wider. Although the focus was on wetlands, a wide range of habitats was investigated, including cultivated fields, gravel parking lots, wetlands of various types, springs,

grassland (grazed and ungrazed), riparian woodland, moist ditches and low shrubbery. Evidence of threats to the population and habitat were recorded where the selected species were found.

Results

Generally, the dry spring of 2001 affected the eastern edge of the study area more than it affected the western regions. Many wetlands dried up and were not productive for most target species. Thus, a significant portion of the data was collected in the western edge of the study area. Detailed status reports will be written for four species: Geyer's wild onion, Californian amaranth, Parry's sedge and Nevada rush. Preliminary status reports have been started for three species that require more fieldwork in portions of their Alberta range: crowfoot violet, sandhills cinquefoil and marsh gentian.

Field surveys showed the importance of investigating "nontraditional" habitats such as ditches, especially for wetland species. Ditches seemed most productive in largely native habitats. Wetlands within cultivated areas that were not grazed by cattle did not support rare species. This absence may be because in dry years many of these wetlands are also cultivated.

All data were entered as Element Occurrences (EOs) in the Alberta Natural Heritage Information Centre (ANHIC) database. Maps showing population locations were created to facilitate subsequent surveys.

Recommendations/Future Direction

Extreme southwestern Alberta contains a high concentration of priority *May Be At Risk* vascular plants and will be the focus of surveys conducted in 2002. Furthermore, if drought conditions occur in 2002, this area is less likely to be affected than the Grassland Natural Region. Two high priority species, *Botrychium paradoxum* and *B. pedunculatum*, for which Alberta contains a large proportion of their global occurrences, will be surveyed. The surveys will be coordinated with those done in Waterton Lakes National Park in order to extend the research beyond park boundaries.

REGION:
Prairie

TARGET SPECIES:

Geyer's Wild Onion (*Allium geyeri*), Pale Blue-eyed Grass (*Sisyrinchium septentrionale*), Californian Amaranth (*Amaranthus californicus*), Spreading Yellow Cress (*Rorippa sinuata*), Parry's Sedge (*Carex parryana* var. *parryana*), Marsh Gentian (*Gentiana fremontii*), Nevada Rush (*Juncus nevadensis*), Sandhills Cinquefoil (*Potentilla fruticosa*), Crowfoot Violet (*Viola pedatifida*), Marsh Muhly (*Muhlenbergia racemosa*), Two-leaved Waterweed (*Elodea bifoliata*), Clammy Hedge-Hyssop (*Gratiola neglecta*)

WILDLIFE ACT CATEGORY:

None

PROVINCIAL GENERAL STATUS:

In Preparation

COOPERATING AGENCIES

Alberta Natural Heritage Information Centre, Agriculture and Agri-Food Canada Herbarium (Ottawa), University of Calgary Herbarium, University of Alberta Herbarium, Provincial Museum of Alberta, Parks Canada

For more
information contact:

Robin Gutsell (see page 7) or **Sue Peters** (Sue.Peters@gov.ab.ca) and see Species at Risk Report No. 21, Proposed protocols for inventories of rare plants of the Grassland Natural Region, and Species at Risk Report (in prep.). Surveys of plant species potentially at risk in the Foothills Fescue Grassland of Alberta 2001.

RARE PLANT INVENTORY IN THE LOWER FOOTHILLS, NORTHERN EAST SLOPES, 2001

Project Supervisor: **Lisa Wilkinson**

REGION:

Northern East Slopes

TARGET SPECIES and SUBSPECIES:

Rare Vascular and Nonvascular
Plants

WILDLIFE ACT CATEGORY:

None

PROVINCIAL HERITAGE STATUS:

In Preparation

Purpose

To determine the occurrence and distribution of rare vascular and nonvascular plants in the White Area of the lower foothills to provide direction for their conservation and management.

Background

Rare plants and their habitats have received little attention in the Northern East Slopes of Alberta. This Region supports many land uses and faces increasing development pressure from oil and gas, forestry and agriculture, making the identification and location of rare species increasingly urgent.

Rare plant surveys are a critical first step in locating, assessing and monitoring rare species. They are important to land use management for the protection of Alberta's biological diversity and for determining priorities for further research.

Methods

The survey encompassed a 1600-km² region bounded in the east and west by Highways 22 and 32, respectively, and in the north and south by Highways 43 and 16. This area is located at the eastern edge of the Lower Foothills Natural Subregion.

Fieldwork was conducted in the summer (July-September) of 2001. An initial list of target sites was made with the help of air photos and topographic maps, and this list was amended with the accumulation of field experience. The following criteria were used in selecting areas for sampling: priority, representative and unique landscape features, rare species ecology, geographic location, human disturbance and protection, and accessibility.

Each site (each landscape feature of interest at each locale) was carefully examined in a systematic fashion, according to Alberta Native Plant Council (2000) guidelines. All plants at each site were identified to genus, and in most cases to species, such that their provincial rarity, as defined by the Alberta Natural Heritage Information Centre (ANHIC 2001), could be determined, or were collected for laboratory examination. ANHIC rankings take each species' distribution and abundance into account, based on guidelines developed by the Nature Conservancy.

Care was taken to survey the full range of microhabitat conditions present at each site, with special attention devoted to local conditions known to support rare species. The location and general conditions of each site (e.g., vegetation type, apparent moisture regime, land uses) were recorded, and detailed site descriptions were

undertaken at those sites where rare plants were found. Most bryophyte specimens could not be determined in the field, and were identified later, from collections. When a rare species was confirmed in the field, photographs were taken and notes on the extent of the occurrence were made.

Results

Fifty-six sites were surveyed for rare vascular plants, and 60 sites were surveyed for rare nonvascular plants. Thirteen populations representing 11 rare nonvascular plant species were discovered (*Aloina rigida*, *Brachythecium rutabulum*, *Dicranella heteromalla*, *Dicranella subulata*, *Hygrohypnum ochraceum*, *Hypnum pallescens*, *Neckera pennata*, *Physcomitrium hookeri*, *Pogonatum dentatum*, *Rhizomnium magnifolium* and *Splachnum ampullaceum*) and two populations of a rare lichen (*Hypocenomyce friesii*). No rare vascular plants were found. Habitat descriptions were compiled for all rare species.

Recommendations/Future Direction

Whitcourt Mountain in general, and Whitcourt Mountain Natural Area in particular, proved to be rich in rare nonvascular plant species. Because the natural area supports several rare species in a relatively small area, attention should be devoted to maintaining the character and diversity of habitats present at the site, including coniferous forests, mature forests, acidic rocky streams and disturbed sand, which are otherwise quite uncommon in the lower foothills study area.

All locations of rare bryophytes recorded in this study should be revisited in the near future to complete population and habitat assessments that were postponed because the identity (and therefore rarity) of each bryophyte was not known at the time of collection. During these visits, it would also be important to examine the effects of human activity on these populations. Although most rare plant populations in this study were discovered in protected areas, several populations may be affected by human activity. Monitoring all rare plant species populations is recommended, at intervals that reflect the rate of natural and anthropogenic habitat change. Rare plant surveys should also be conducted in other areas within the Northern East Slopes.

COOPERATING AGENCIES

Devonian Botanic Garden,
University of Alberta
Cryptogamic and Vascular
Plant Herbaria, Provincial
Museum of Alberta
Herbarium, Alberta Natural
Heritage Information Centre

For more information contact:

Lisa Wilkinson (see page 7) and see
Species at Risk Report (in prep.), Rare
plant inventory of the eastern edge
of the Lower Foothills Natural
Subregion, west-central Alberta.

reptiles

PRAIRIE RATTLESNAKE HIBERNACULUM INVENTORY AND MONITORING

Project Supervisor: **Joel Nicholson**

purpose

To locate previously unknown rattlesnake hibernacula within a study area along the South Saskatchewan River and to begin a long-term monitoring program at selected hibernacula in the Prairie Region.

Background

The prairie rattlesnake is found throughout much of western North America. In Alberta, this species is primarily distributed along major river drainages in the southeastern portion of the province. Historically, the prairie rattlesnake was found as far north as Trochu, and as far west as Calgary. The range has apparently contracted toward the east and south, but has remained relatively unchanged since 1977.

This species has been subjected to intense persecution, and is still vulnerable to "rattlesnake roundups" in the United States. Prairie rattlesnakes are not afforded legal protection anywhere in the U.S. The prairie rattlesnake is listed as a *Non-game Animal* under Alberta's *Wildlife Act*, and is afforded protection from harassment, hunting, possession and trafficking. While the hibernacula of all other Alberta snake species are protected from September to April, provincial regulations were recently changed to grant year-round protection to the hibernacula of prairie rattlesnakes.

The prairie rattlesnake is at the northern edge of its range in Alberta, and the availability of suitable overwintering hibernacula is likely a major factor limiting abundance and distribution. The species has a low reproductive rate, and will be slow to recover from population declines. This characteristic dictates that any program designed to monitor population trends must be long-term.

Current threats to this species include the loss of native grassland habitat, mortality associated with industrial

development, urbanization, high levels of road mortality, and intentional killing of snakes and vandalism of den sites.

Methods

The hibernaculum inventory project was conducted using a technique derived from an air photo study that was developed in 1997 by Corporate Management Services, Prairie Region. Attributes of known active snake hibernacula were used to classify the study area into blocks of habitat likely to contain den sites. A foot search of the coulee complexes was conducted in the spring before snake dispersal and during the late summer and fall as the snakes returned in preparation for winter. Additional potential sites were also located during the summer and revisited in the fall to check for presence of snakes. The hibernacula were pinpointed using Global Positioning System (GPS) units, and aerial photographs were used for further reference.

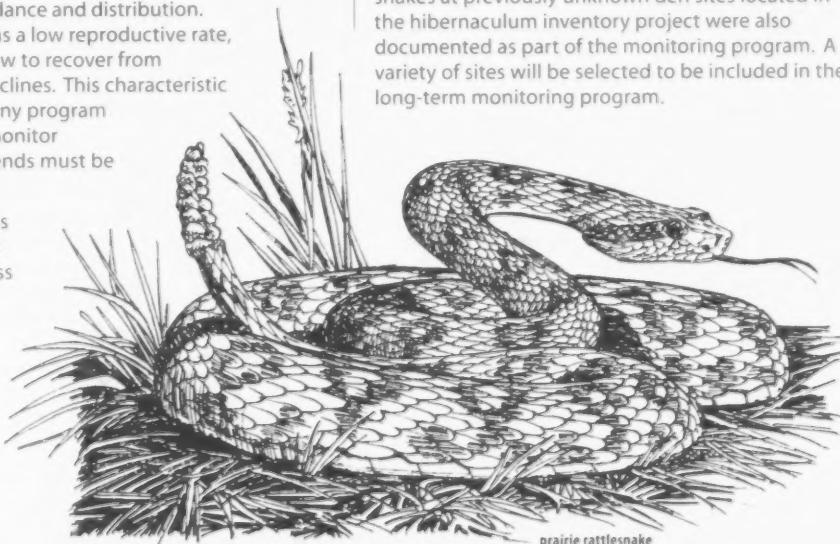
Monitoring at a number of known rattlesnake den sites in the Prairie Region also occurred. These sites were visited in the spring and fall to document the occurrence and abundance of snakes. Numbers of snakes at previously unknown den sites located in the hibernaculum inventory project were also documented as part of the monitoring program. A variety of sites will be selected to be included in the long-term monitoring program.

REGION:
Prairie

TARGET SPECIES:
Prairie Rattlesnake (*Crotalus viridis viridis*)

WILDLIFE ACT CATEGORY:
Non-game Animal
(ESCC Recommendation: Data Deficient)

PROVINCIAL GENERAL STATUS:
May Be At Risk



prairie rattlesnake

Results

The air photo stratification process identified numerous locations in the study area as likely to contain snake hibernacula. These areas were searched on foot, and seven previously unknown snake dens were located within the study area. Between one and 12 snakes were observed at these sites during the spring or fall. Another five sites were identified as snake rookeries. These sites contained gravid individuals, adult snakes with newborn young, or just newborn young. One site contained a female and a litter of 12 newborn rattlesnakes. Dens varied in size and in the number of snakes present. Many dens were located in close proximity to roads and trails constructed by the oil and gas industry.

Recommendations/Future Direction

Overall, the methodology used in this project seems to be an effective way of finding snake hibernacula. Additional use and refinement of this method, and linkage to other prairie rattlesnake research initiatives should be beneficial.

Recommendations from this project are as follows:

- 1) Revisit new hibernaculum sites with low numbers of snakes to determine if they are indeed overwintering dens.
- 2) Revisit rookeries to confirm continued use.
- 3) Place Protective Notations (PNTs) on snake hibernacula to ensure protection from oil and gas development.
- 4) Continue to monitor located sites over the long term to assess survival and population trends.
- 5) Conduct hibernaculum inventories in additional areas throughout the range of the prairie rattlesnake in Alberta.
- 6) Improve the land use referral process relating to snake conservation.

COOPERATING AGENCIES

Local ranches

For more
information contact:

Joel Nicholson (see page 7) and see
Species at Risk Report (in prep.),
Prairie rattlesnake (*Crotalus viridis*)
hibernaculum inventory and
monitoring in the Prairie Region.

ASSESSMENT OF CRITICAL HABITAT FOR PRAIRIE RATTLESNAKE IN ALBERTA

Project Supervisors: **Richard Quinlan, Joel Nicholson**

Project Researcher: **Alexis Fast** (University of Calgary)

purpose

To develop a model for predicting the probability of occurrence of rattlesnake hibernacula, and to define critical habitat for gravid females.

Background

Development of the native prairie is thought to have had serious effects on the distribution and abundance of prairie rattlesnakes in Alberta. The species occurs in the southeastern part of the province, which is one of the most human-altered and fragmented landscapes in Canada. Intensive agriculture, road and pipeline construction, and intentional persecution have had the greatest influence on the species. These activities can destroy essential winter den sites and foraging habitat. Also of critical importance is the habitat required by gravid prairie rattlesnakes.

In Alberta, the prairie rattlesnake has a general status of *May Be At Risk*, and has been recommended as *Data Deficient* by the Endangered Species Conservation Committee (ESCC). Although prairie rattlesnake hibernacula are protected year-round under Alberta's *Wildlife Act*, there is insufficient information on den distribution or critical habitat for making appropriate land use decisions. Limited progress has been made in developing predictive models for defining prairie rattlesnake critical habitat using air photo interpretation and land classification. The focus of this research is to build on previous work to improve the predictive capability of habitat models that can be used for conservation and land use decision making.

Methods

A preliminary den selection model was developed to predict the occurrence of prairie rattlesnake hibernacula across the landscape based on remotely sensed data. Use (known dens) was compared with availability (random points) to develop this resource selection function.

Forward stepwise logistic regression was used to determine which combinations of variables best discriminated between dens and random points. The six variables included in the analyses were slope, elevation, hillshade, distance to water, percent native prairie, and aspect—north, east, south and west. The resulting logistic regression equation was used as the resource selection function for predicting the occurrence of den sites in the study area.

The other key aspect of this program is to develop a resource selection function to predict habitat selection by gravid prairie rattlesnakes within

their home ranges. As with the den selection model, use (snake relocations) will be compared with availability (random points) to develop the habitat selection model.

Gravid prairie rattlesnakes were implanted with radio transmitters and tracked to obtain habitat use data. Snake relocations were characterized according to the following biophysical factors: percent vegetative cover within a 1-m² quadrat around the snake location, slope, aspect, position on slope, and the distance to landscape features such as water, roads, and oil and gas activity.

Results

The preliminary den selection model indicated that slope and aspect are significant variables in predicting the occurrence of a den site. The probability of occurrence of a den increased with increasing slope and with south and east aspects. However, because the data used to develop the model were not collected randomly, the resultant model may have been biased.

The initial phase of determining habitat selection by gravid snakes was initiated in spring 2001. Seven gravid prairie rattlesnakes were implanted with radio transmitters and tracked at least once every three days throughout the spring and summer.

Recommendations/Future Direction

In 2002, systematic searches for hibernacula will be used to develop an unbiased model to predict the occurrence of prairie rattlesnake dens.

Home ranges of gravid female rattlesnakes will be determined and a data set of random points from within these home ranges will also be developed. These points will be characterized by the same biophysical information as was collected for each snake relocation in 2001. A habitat selection model for gravid prairie rattlesnakes will then be developed using these data sets.

REGION:

Prairie

TARGET SPECIES:

Prairie Rattlesnake (*Crotalus viridis viridis*)

WILDLIFE ACT CATEGORY:

Non-game Animal
(ESCC Recommendation: Data Deficient)

PROVINCIAL GENERAL STATUS:

May Be At Risk

COOPERATING AGENCIES

Alberta Conservation Association, Canadian Wildlife Service, Natural Sciences and Engineering Research Council, University of Calgary

For more information contact:

Joel Nicholson (see page 7).

MANAGEMENT AND RECOVERY STRATEGIES FOR THE LETHBRIDGE POPULATION OF THE PRAIRIE RATTLESNAKE

Project Supervisor: **Richard Quinlan**

REGION:

Prairie

TARGET SPECIES:

Prairie Rattlesnake (*Crotalus viridis viridis*)

WILDLIFE ACT CATEGORY:

Non-game Animal

(ESCC Recommendation: Data Deficient)

PROVINCIAL/TERRESTRIAL STATUS:

May Be At Risk

Purpose

To recover the Lethbridge population of the prairie rattlesnake to a sustainable level through public education and by providing secure hibernacula and foraging areas for rattlesnakes in the city.

Background

The coulees of southwest Lethbridge are home to a population of prairie rattlesnakes. Population estimates based on monitoring at known hibernacula indicate that the population is very small—estimated to be 30-40 adults. High rates of mortality from road kills, deliberate human persecution and a rapid loss of habitat from subdivision and recreational development make the future of Lethbridge rattlesnakes uncertain.

In the fall of 1999, concerned citizens and staff from the City of Lethbridge determined that a management plan was necessary if the Lethbridge population of rattlesnakes was to be saved from elimination. In 2000, a committee was formed to develop a management plan. Public participation was solicited through an open house, and public attitudes towards maintaining a Lethbridge population of rattlesnakes were evaluated using a questionnaire. More than 70 residents attended the open house and expressed a strong desire to conserve and enhance the remaining population of prairie rattlesnakes through recovery efforts. As well, a strong focus on public education and cooperation between interested groups was initiated in 2000 and continued in 2001.

Efforts in 2001 focused on relocating the rattlesnake population to Cottonwood Park, where its long-term survival seems most likely. Cottonwood Park offers many advantages, including its location away from residential and recreational areas, its designation as a Nature Reserve, its lack of road access and its favourable habitat features.

Methods

During May 2001, a hibernaculum was constructed in Cottonwood Park, complete with a holding area to contain captured rattlesnakes. The hibernaculum site was chosen based on the following criteria: security, slope aspect, suitable topography for sun basking, and nearby food sources. Individual rattlesnakes that were in conflict with humans (e.g., unwanted snakes in yards, on busy roads, in subdivisions, or

rattlesnakes adjacent to these high-risk areas) were captured and relocated to the hibernaculum throughout the summer. A feeding program was initiated at the hibernaculum and snake behaviour was monitored during numerous visits over the summer and fall of 2001.

Results

Eighteen rattlesnakes were captured, released, and maintained at the Cottonwood Park hibernaculum. Rattlesnakes fed, mated and gave birth at the site. A chain link fence complete with locked gate was installed around the enclosure in late summer, following vandalism at the hibernaculum. At least one rattlesnake was killed through vandalism and others may have been released from the site.

In 2001, a strong emphasis on education and cooperation resulted in many reports of snake activity and calls for relocating rattlesnakes. This is in contrast to previous years when reports of rattlesnake activity were lacking and the fate of rattlesnakes in conflict with humans was uncertain.

Recommendations/Future Direction

Overwinter survival of rattlesnakes will be monitored during the winter of 2001-2002. Rattlesnake movements and the return of rattlesnakes in the fall of 2002 will also be monitored using radio telemetry. Snakes that come into conflict with people will continue to be moved to this site.

Continued efforts to provide public education and the participation and cooperation of all interested groups and citizens will be necessary to recover and maintain a sustainable rattlesnake population in Lethbridge.

COOPERATING AGENCIES

Alberta Conservation Association, City of Lethbridge, Lethbridge Naturalists Society, Paradise Canyon Resort, Runner's Soul

For more information contact:

Richard Quinlan (see page 7) and see Species at Risk Report No. 40, Management and recovery strategies for the Lethbridge population of the prairie rattlesnake.

RED-SIDED GARTER SNAKE RELOCATION AND EDUCATION PROJECT

Project Supervisors: **Lisa Takats** (ACA), **Steve Brechtel**

PURPOSE

To determine the effectiveness of relocation techniques in moving red-sided garter snakes to a new den, and to inform the public about the importance of snakes in the ecosystem.

Background

The red-sided garter snake is found throughout Alberta, but is most frequently observed in the boreal forest and aspen parkland. The provincial population is thought to be stable, although there is a public perception of declines. Long-term information on population trends is lacking.

Potential threats to populations of red-sided garter snakes include direct killing, collection and roadside mortality. Potential threats to the species' habitat include oil and gas exploration, gravel extraction, road and bridge construction, urban sprawl and destruction of den sites. One of the most important habitat components for snakes is the hibernaculum (or den), which provides a safe place for snakes to spend the winter.

An extensive literature search revealed that little work had been conducted on relocating snakes to alternative den sites. Snakes and hibernacula that occur on private land, and that are considered a nuisance, have often been destroyed. This practice could be reduced by the development of effective translocation techniques. This project tested translocation techniques by moving red-sided garter snakes from an unwanted hibernaculum located on private property to a nearby but more remote hibernaculum in an old gravel pit.

Methods

The study was conducted north of Stony Plain and was initiated in 1998. Snakes were captured using funnel traps and relocated to another occupied den site. All relocated snakes were marked by scale clipping, and large snakes were also marked with Passive Integrated Transponder (PIT) tags. Spring and fall counts were conducted over the course of the study to determine occupancy rates at both sites. Return rates and a population estimate were determined at the new site.

Results

The relocation study was successful, and 1190 garter snakes were relocated to a den 9.5 km away that contained approximately 8000 snakes. Relocations took place in the fall of 1998 (282 snakes), the spring of 1999 (341 snakes) and the fall of 1999 (567 snakes). Thirty percent of the snakes that were relocated were recaptured at the new site in spring 2000. Resident snakes at the new den showed a 32.5% return rate.

Education activities included talks, posters, field trips, media events, scientific conferences and work

on another snake den management program in Fort Assiniboine with Grade 1 and 2 students. Close to 1900 people were informed about snakes, their importance, biology and conservation. A Snakes of Alberta poster was created to increase public knowledge about snakes and their habitats.

Recommendations/Future Direction

Red-sided garter snake recruitment is extremely slow. They do not breed until at least three years of age and likely breed every other year after that. First broods are seldom more than 1-5 young. Approximately 80% of the young do not survive their first winter and 50% of each year class dies annually thereafter. Management of garter snake hibernacula is particularly important, as these sites are critical for breeding and overwinter survival.

Management plans should include the following activities:

- 1) Garter snake populations are known to vary from year to year at a den site, necessitating annual monitoring for a minimum of ten years to determine population size and trends. Volunteers can be used to monitor garter snake populations.
- 2) Counting techniques need to be refined to determine accurate population estimates. Fencing and trapping snakes at a number of den sites to determine population size is often logistically impracticable. Development of a technique (e.g., counting breeding balls) that provides an estimate of the number of snakes at the site would be extremely useful.
- 3) If a den is in an unsuitable location, management options can include blocking the entrance to the hole when the snakes leave the den in the spring; relocating snakes to another occupied den; or relocating to an artificial den. Effectiveness of artificial dens is currently being studied in Manitoba and in St. Paul, Alberta.
- 4) Protection of den sites during the time snakes are present is critical. This would necessitate changing protection of red-sided garter snake dens under Alberta's *Wildlife Act* from 1 September – 30 April to 15 August – 30 June.
- 5) Full protection of key den sites will ensure that large populations of snakes remain.
- 6) Public education is essential. As the public learns about the importance of snakes in the environment, they will be less inclined to destroy or damage dens or snakes.

REGION:

Headquarters (conducted in Northern East Slopes)

TARGET SPECIES:

Red-sided Garter Snake
(*Thamnophis sirtalis*) (now known as Common Garter Snake)

WILDLIFE ACT CATEGORY:

Non-licence Animal

PROVINCIAL GENERAL STATUS:

Sensitive

COOPERATING AGENCIES

Alberta Conservation Association, Alberta Sport, Recreation, Parks and Wildlife Foundation, TD Friends of the Environment Foundation, Alberta Ecotrust

For more information contact:

Steve Brechtel (see page 7) and see Species at Risk Report No. 30, Red-sided garter snake (*Thamnophis sirtalis parietalis*) education and relocation project—final report.

A SURVEY OF SHORT-HORNED LIZARD POPULATIONS IN ALBERTA

Project Supervisors: **Joel Nicholson, Richard Quinlan**

REGION:

Prairie

TARGET SPECIES:

Short-horned Lizard
(*Phrynosoma hernandesi*)

WILDLIFE ACT CATEGORY:

Non-game Animal

PROVINCIAL GENERAL STATUS:

May Be At Risk

purpose

To determine the distribution of short-horned lizard populations in southern Alberta.

Background

Occurring in Alberta at the northern periphery of its North American range, the short-horned lizard is the only native lizard species found in the province. The species is known to occur in a number of relatively isolated and widely scattered locations within the southeastern portion of the province. Never found in abundance, this small well-camouflaged lizard typically occurs in low-density populations. The species is classified as *May Be At Risk* at the general status level in Alberta, owing to the small number of disjunct populations and the threats to its habitat from cultivation, road development and industrial activity.

Within Alberta, short-horned lizards occur in the Dry Mixedgrass Natural Subregion and tend to inhabit localized areas with thinly vegetated slopes and southern aspects that are located along rivers and other major topographic features. Generally, populations have been recorded in areas near the urban centres of Medicine Hat, Bow Island, Manyberries and Foremost.

The last effort to determine the range and assess the general population of short-horned lizards in Alberta was conducted in 1991. The 2001 inventory program was initiated to gather information on current distribution. The intent of the program was to target historically recorded locations for the species in the province, in order to evaluate the probability of continued persistence given the habitat currently available, and to determine whether short-horned lizards were present at these sites.

Methods

Surveys were conducted in areas of previously recorded observations, during late July and mid-August. The surveys were timed to immediately follow the parturition period (when females give birth) to coincide with the largest lizard population of the year.

The search technique consisted of walking slowly back and forth across appropriate habitat, with each pass being about 2 m from the last path taken. Searchers generally walked side-by-side about 2 m apart, scanning the ground and probing vegetation clumps. Efforts were made to avoid covering area that had previously been searched.

Captured animals were temporarily marked with a non-toxic felt-tipped pen to avoid re-counting the same individuals accidentally. Information collected included location (NAD83 format—12U/UTM), sex, age, weight, snout-vent length (SVL), local vegetation characteristics, a description

of the surrounding vegetation, slope and aspect of the capture site, general weather conditions and estimates of daily high and low temperatures on search days. The time spent searching was also recorded. Photos were taken of most locations to provide a visual record of sites, regardless of whether lizards were captured.

Results

Forty-three separate sections of land were searched, either completely or in part. These sites were grouped together into three broadly related regions: along the South Saskatchewan River valley and affiliated with the Chin or Forty-Mile coulees, within the Manyberries Hills area, and along the Milk River valley and associated drainages. An additional 30 sections of land with historical short-horned lizard records were not searched during the 2001 field season because of time constraints.

Approximately 122.5 ha of suitable habitat were covered, with field biologists spending a total of 291.5 person-hours searching. In total, 125 individual lizards: 36 male, 49 female and 40 juvenile were captured. Within those sites occupied by lizards, the average density of captures was calculated to be approximately 2 animals/ha, although south-facing sites were generally more densely populated than other sites. Some of the historical sites searched in 2001 lacked suitable habitat because of ongoing habitat loss and fragmentation.

All capture data were entered into the Biodiversity/Species Observation Database (BSOD).

Recommendations/Future Direction

When compared with the results of previous search efforts, short-horned lizard populations inventoried in 2001 generally appeared stable, although lizards were not observed at some previously occupied sites. Surveys should continue in 2002, targeting historical locations that were not searched during 2001 and potentially suitable sites that have not been previously surveyed. Once a current list of active sites has been determined, population size could be monitored on a much smaller scale, with selected locations receiving brief annual surveys. Such surveys could provide the long-term information that would aid in obtaining a reasonable evaluation of population trends and therefore a more accurate status assessment for this species in the province. The long-term site-specific monitoring could be augmented with once-per-decade site checks at outlying, less densely populated sites.

COOPERATING AGENCIES

Local landowners and leaseholders

For more information contact:

Joel Nicholson (see page 7) and see Species at Risk Report No. 29, A survey of short-horned lizard (*Phrynosoma hernandesi hernandesi*) populations in Alberta.

communication/resource tools

BOW CITY SOUTH PROTECTIVE NOTATION EVALUATION

Project Supervisor: **Richard Quinlan**

Purpose

To confirm the accurate placement of Protective Notations in the Bow City area and to determine the effectiveness of Protective Notation size.

Background

The Bow City South area, located just east and south of the town of Bow City, is subject to a variety of land uses, including gravel extraction, grazing, crop production, oil and gas exploration and a pipeline right-of-way. The area has also been used historically by a number of species at risk, including northern leopard frog, plains spadefoot, peregrine falcon and burrowing owl. The area likely supports other species of concern such as the prairie falcon, ferruginous hawk, long-billed curlew and Sprague's pipit.

The present method for protecting public lands that are occupied or used by species at risk is through the establishment of Protective Notation Reservations (PNTs), in cooperation with the Public Lands Division. PNTs placed on species at risk production sites typically prohibit surface access within a localized area, usually less than 16 ha (40 ac.) in size. Four PNTs are in place on public land in the Bow City South study area. Two PNTs for northern leopard frog and one PNT for peregrine falcon exist along the Bow River, and one PNT for plains spadefoot is located in the northwest corner of the study area. This project examined the current use of these reserves by species at risk and the effectiveness of the reserve for protecting populations and habitats of these species at risk.

Methods

Before the fieldwork, data on historical locations of select species occurring in the Bow City South area were compiled, and maps with existing PNTs were obtained from the Public Lands Division. Life history information on the target species was used to determine appropriate timing and search methods.

Ground surveys of key sites were conducted from 5 to 8 June, following a couple days of precipitation. The sites were visited again on 11 June and 19 July. Auditory and visual searches

for avian species were conducted during daylight hours, and during twilight hours and at night for amphibians.

Results

Historical locations for plains spadefoot, northern leopard frog and peregrine falcon were not confirmed; however, a northern leopard frog was observed in a backwater site along the Bow River at the eastern edge of the study area. This new location for leopard frog and several prairie falcon nesting sites were found in areas with little protection from future developments. Several long-billed curlews, numerous Sprague's pipits and a variety of other wildlife species were also observed in the study area.

Recommendations/Future Direction

Although this study did not confirm the presence of plains spadefoot, northern leopard frog and peregrine falcon in existing PNT reservations, evidence did not suggest total abandonment of the sites by these species. In addition, precipitation levels in 2001 may not have been adequate for the plains spadefoot to emerge from their burrows. After consultation with Fish and Wildlife Division staff, the entire spadefoot PNT was shifted 200 m to the west to what appeared to be more suitable habitat. The new leopard frog and prairie falcon sites should be examined to determine the best options for protection.

Several valuable observations about the process for protecting species at risk were noted during this project:

- 1) The effectiveness of PNTs is likely reduced by size limitations and linear configuration. PNTs that are less than 16 ha (40 ac.) may not provide long-term protection for species at risk.

REGION:

Prairie

TARGET SPECIES:

Northern Leopard Frog (*Rana pipiens*), Plains Spadefoot (*Scaphiopus bombifrons*), Peregrine Falcon (*Falco peregrinus anatum*), Burrowing Owl (*Athene cunicularia*)

WILDLIFE ACT CATEGORY:

Threatened: Northern Leopard Frog, Peregrine Falcon, Burrowing Owl

Non-game Animal: Plains Spadefoot

PROVINCIAL GENERAL STATUS:

At Risk: Northern Leopard Frog, Peregrine Falcon, Burrowing Owl

May Be At Risk: Plains Spadefoot

- 2) A reliable notification system should be established to ensure that Fish and Wildlife Division staff are informed of land use applications within critical areas, and that Public Lands Division staff have current information regarding species at risk observations. This may reduce the lag time of the referral process while improving the protection of species at risk.
- 3) The average home range size of many of the species at risk should be used to help determine the size of PNT needed to adequately protect target species.
- 4) Protection of small islands of land for a particular species while allowing development to occur in adjoining areas may not effectively conserve species at risk. Individual species need protection, but landscape-level planning is required for long-term protection of species at risk.

COOPERATING AGENCIES

Alberta Sustainable Resource
Development—Public Lands
Division

For more
information contact:

Richard Quinlan (see page 7).



plains spadefoot

PROVINCIAL PARKS SPECIES AT RISK SIGNAGE

Project Supervisor: **Richard Quinlan**

purpose

To provide information on species at risk found in and near Writing on Stone, Police Outpost and Beauvais Lake provincial parks.

Background

There has been very little signage in provincial parks to inform users about species at risk. This project was designed to enhance public awareness of species at risk by providing information at three key parks in southern Alberta.

Methods

Priority species for signage were determined by the regional Species at Risk biologist, in consultation with park interpreters and planners. Selected species included those of the highest level of concern that were most likely to be found in each park. Sign design and construction were coordinated by park interpreters.

Results

Three signs were designed, constructed and erected—one at each of the provincial parks. Each sign described a specific habitat type (riverine/riparian, montane, wetland) and included pictures and information on several species at risk in the park. A conservation/stewardship message was also included on each sign.

Recommendations/Future Direction

This is an effective way to inform the public about Alberta's species at risk. Provision of signs of this type should be continued where there are concentrations of several species at risk.



western blue flag

REGION:

Prairie

TARGET SPECIES:

Trumpeter Swan (*Cygnus buccinator*), Western Blue Flag (*Iris missouriensis*), Grizzly Bear (*Ursus arctos*), Blue Camas (*Camassia quamash*), Bull Trout (*Salvelinus confluentus*), Brassy Minnow (*Hybognathus hankinsoni*), Western Silvery Minnow (*Hybognathus argyritis*), Shorthead Sculpin (*Cottus confusus*), Northern Leopard Frog (*Rana pipiens*), Weidemeyer's Admiral (*Limenitis weidemeyerii*), Plains Cottonwood (*Populus deltoides*), Narrow-leaf Cottonwood (*Populus angustifolia*)

WILDLIFE ACT CATEGORY:

Threatened: Trumpeter Swan, Northern Leopard Frog

Big Game: Grizzly Bear

(ESCC Recommendation—

Threatened: Western Blue Flag, Grizzly Bear)

(ESCC Recommendation—Special Concern: Bull Trout)

PROVINCIAL GAMING STATUS:

At Risk: Trumpeter Swan, Northern Leopard Frog

May Be At Risk: Grizzly Bear, Western Silvery Minnow, Shorthead Sculpin, Weidemeyer's Admiral

Sensitive: Bull Trout

Undetermined: Brassy Minnow

In Preparation: Western Blue Flag, Blue Camas, Plains Cottonwood, Narrow-leaf Cottonwood

COOPERATING AGENCIES

Alberta Community Development—Parks and Protected Areas Division

For more information contact:

Richard Quinlan (see page 7).

GRASSLAND SPECIES AT RISK DISPLAY

Project Supervisors: **Joel Nicholson, Jo-Anne Reynolds** (Medicine Hat Interpretive Program)

REGION:

Prairie

TARGET SPECIES:

Grassland Species At Risk

INDUSTRY ACT CATEGORY:

Varied

PROVINCIAL GOVERNMENT STATUS:

Varied

Purpose

To develop an interpretive program and display to increase public awareness and understanding of issues relating to species at risk in southeastern Alberta.

Background

Species at risk have received a considerable amount of publicity in recent years. However, the general public (urban and rural) still lacks an in-depth knowledge and understanding of the issues, which has resulted in an atmosphere of suspicion and confusion. A close, objective examination of the issue reveals that many of the concerns in the prairie region may be exaggerated or unfounded. Using modern interpretive techniques, this project will seek to provide a more positive atmosphere by encouraging greater knowledge and understanding of listed and potential species at risk that occur in southeastern Alberta. The project will address five main questions:

- What species are at risk?
- Why are they at risk?
- Why do we want to assist them?
- What are we doing to assist them?
- What can we all do to assist them?

Methods

The project's objective will be fulfilled through the use of interpretive programs and a display. The display and programs will be portable (to facilitate travel to many locations) and interactive (three-dimensional and multi-media to increase interest and promote understanding). The content will be based on science and fact.

The display will feature five modules, each covering one of the questions above. They will feature illustrations and text, three-dimensional props, interactive components, relevant brochures and handouts, and aspects to attract the attention of all age groups. A live burrowing owl is anticipated to be part of the display during those times when the display is attended by an interpreter. A short introductory program will be prepared to introduce the display when it is first set up at a new venue.

The aspect of travel is an important part of the project, as it will facilitate reaching as wide an audience as possible. This type of intensive effort, focusing on species at risk, has an urban and rural target audience, numerous elements of professional outreach interpretation, and has never been provided before in southeastern Alberta.

Results

The project is currently in production, and is scheduled to open at the Medicine Hat Exhibition and Stampede on 24 to 27 July 2002. It will be booked into various locations in southern Alberta during the summer and fall of 2002.

Recommendations/Future Direction

The display and program will be evaluated and updated periodically, to ensure that the information is current. A school program on grassland species at risk will be prepared for the next school year.

COOPERATING AGENCIES

Medicine Hat Interpretive Program, TransCanada, Shell Environmental Fund, Medicine Hat Community Lottery Board

Joe! Nicholson (see page 7)
or Jo-Anne Reynolds
(grassnat@memlane.com).

THE STATUS OF ALBERTA WILDLIFE—DETAILED STATUS REPORTS

Project Supervisors: **Sherry Feser** (ACA), **Robin Gutsell**, **Steve Brechtel**

To initiate new detailed status reports, and to post recently published reports on the Fish and Wildlife Division website.

Background

Every five years, the Fish and Wildlife Division reviews the status of wild species in Alberta. These assessments, which were conducted in 1991, 1996 and 2000, assign individual species general status ranks that reflect the perceived level of risk to populations that occur in the province.

The Alberta Wildlife Status Report series builds on the general status exercise (*The Status of Alberta Wildlife* [1996], *The General Status of Alberta Wild Species 2000* [2001]), and provides comprehensive summaries of the biological status of selected wildlife species in Alberta.

These detailed status reports profile all current, relevant and available information for a species in a single document. The reports provide important information to the Endangered Species Conservation Committee (ESCC) and are an invaluable tool for Fish and Wildlife Division staff. Information contained within these reports has not only aided management decisions, but has raised public awareness of the current status of Alberta's wildlife species. As of March 2002, 43 detailed status reports had been published since the inception of the report series.

Methods

Qualified individuals were contracted to prepare the new reports. Each report went through an extensive editing process before being printed. In addition, the data sets that resulted from each report were entered into the Biodiversity/Species Observation Database (BSOD).

Results

Ten reports were initiated in 2001-2002: yucca moth (*Tegeticula yuccasella*), American white pelican (*Pelecanus erythrorhynchos*), brown creeper (*Certhia americana*), white-winged scoter (*Melanitta fusca*), northern leopard frog (*Rana pipiens*) update, lake sturgeon (*Acipenser fulvescens*), Geyer's wild onion (*Allium geeyeri*), Californian amaranth (*Amaranthus californicus*), Parry's sedge (*Carex parryana* var. *parryana*) and Nevada rush (*Juncus nevadensis*). The yucca moth report was printed in March 2002. The final drafts of the brown creeper, white-winged scoter and lake sturgeon reports are complete and will be printed in 2002. The American white pelican status report was postponed indefinitely.

Six reports initiated in the previous fiscal year were printed in 2001-2002: prairie falcon (*Falco mexicanus*), bull trout (*Salvelinus confluentus*), wood bison (*Bos bison athabasca*), American badger (*Taxidea taxus*), Banff Springs snail (*Physella johnsoni*) and shortjaw cisco (*Coregonus zenithicus*). The grizzly bear (*Ursus arctos*) status report that was initiated in 1997 was also printed in January 2002. A data compilation report on Franklin's ground squirrel (*Spermophilus franklinii*) was completed in November 2001.

Recommendations/Future Direction

Priorities for detailed status reports planned for 2002-2003 include the following species:

- western silvery minnow (*Hybognathus argyritis*)
- shorthead (St. Mary) sculpin (*Cottus confusus*)
- stonecat (*Noturus flavus*)
- sand verbena (*Tripterocalyx micranthus*)
- slender mouse-ear-creep (*Halimolobos virgata*)
- mountain plover (*Charadrius montanius*)

Provincial (conducted in Headquarters)

At Risk/May Be At Risk/
Undetermined species

Varied

Varied

COOPERATING AGENCIES

Alberta Conservation Association



Banff Springs snail

Robin Gutsell (see page 7) or Sue Peters (Sue.Peters@gov.ab.ca) and see <http://www3.gov.ab.ca/srd/fw/status/reports/index.html>

For copies of the reports, contact: Information Centre 780.422.2079

ALBERTA'S SPECIES AT RISK BROCHURES AND LEAFLETS

Project Supervisors: **Sherry Feser** (ACA), **Robin Gutsell**, **Steve Brechtel**

REGION:

Provincial (conducted in Headquarters)

TARGET SPECIES:

Swift Fox (*Vulpes velox*), Woodland Caribou (*Rangifer tarandus caribou*), Black-throated Green Warbler (*Dendroica virens*), Ord's Kangaroo Rat (*Dipodomys ordii*), Trumpeter Swan (*Cygnus buccinator*), Great Plains Toad (*Bufo cognatus*), Canadian Toad (*Bufo hemiophysys*), Western Spiderwort (*Tradescantia occidentalis*), Long-billed Curlew (*Numenius americanus*)

WILDLIFE ACT CATEGORY:

Endangered: Swift Fox

Threatened: Woodland Caribou, Trumpeter Swan

Non-game Animal: Black-throated Green Warbler, Ord's Kangaroo Rat, Great Plains Toad, Canadian Toad, Long-billed Curlew

(ESCC Recommendation—Endangered: Western Spiderwort)

(ESCC Recommendation—Endangered: Ord's Kangaroo Rat, recommendation approved and Wildlife Regulation amended June 2002.)

(ESCC Recommendation—Special Concern: Black-throated Green Warbler, Long-billed Curlew)

(ESCC Recommendation—Data Deficient: Great Plains Toad, Canadian Toad)

PROTECTED STATUS:

At Risk: Swift Fox, Woodland Caribou, Trumpeter Swan

May Be At Risk: Ord's Kangaroo Rat, Great Plains Toad, Canadian Toad, Long-billed Curlew

Sensitive: Black-throated Green Warbler

In Preparation: Western Spiderwort

COOPERATING AGENCIES

Alberta Conservation Association, Alberta Pacific Forest Industries, Boreal Caribou Committee, Suncor Energy, TransCanada, Weyerhaeuser Canada

For more information contact:

Robin Gutsell (see page 7) and see <http://www3.gov.ab.ca/srd/fw/threatsp/index.html>.

For copies of the brochures, contact: Information Centre 780.422.2079

Purpose

To update and reprint the swift fox and woodland caribou brochures and to design a one-page leaflet for species evaluated by the Endangered Species Conservation Committee (ESCC).

Background

Successful recovery of species at risk depends on public support and understanding of the issue of species' decline. One of the key roles of wildlife managers is to provide sound information to the public on the status of wild species, their needs, and the land use and management activities that are either beneficial or detrimental to the maintenance of wildlife populations.

In 1989, Alberta's Threatened Wildlife series was initiated in response to the need to inform the public about select species at risk. By 1999, 13 brochures had been printed on the following species: peregrine falcon, northern leopard frog, American white pelican, ferruginous hawk, western blue flag, swift fox, woodland caribou, trumpeter swan, piping plover, whooping crane, bull trout, burrowing owl and loggerhead shrike. Selected brochures were updated and reprinted as required. Two new brochures were created in 2000-2001 (Ord's kangaroo rat, greater sage-grouse) and two were updated and reprinted (whooping crane, trumpeter swan).

In 2001, a need to produce short one-page leaflets on species evaluated by the ESCC was identified. These leaflets will be used by ESCC members and will be accessible on the Fish and Wildlife Division website. The leaflets were designed for a wide audience, including ESCC members and their organizations, media and the general public.

Methods

Information contained in the Alberta Wildlife Status Report series is used to prepare the brochures, and an expert on each species reviews the information to ensure that it is up-to-date and accurate. Each brochure undergoes an extensive editing process before being printed.

The leaflets were written by staff of the Alberta Conservation Association and the Fish and Wildlife Division and reviewed by species experts. Layout and design of the leaflets were professionally developed, but have been designed so that in-house changes can be made.

Results

In 2001-2002, two brochures were updated and reprinted (woodland caribou, swift fox). The brochure series title was also changed to Alberta's Species At Risk, which replaces the previous title, Alberta's Threatened Wildlife. This change was made because *Threatened* is a legal designation under Alberta's *Wildlife Act*, and not every species included in the brochure series is ranked as *Threatened*.

Eight leaflets were written and printed with the new template design: Ord's kangaroo rat, trumpeter swan, woodland caribou, Great Plains toad, Canadian toad, western spiderwort, long-billed curlew and black-throated green warbler.

Recommendations/Future Direction

In 2002-2003, partnerships and external funding sources will be sought to develop new leaflets for grizzly bear, bull trout, wood bison, pygmy whitefish, wolverine, loggerhead shrike, harlequin duck, whooping crane and ferruginous hawk.



swift fox

recovery planning

One of the important components of Alberta's Species at Risk Program is the development and implementation of recovery plans for Alberta species that are designated as *Threatened* or *Endangered*. The overall goal of the recovery program is to restore these species to viable, naturally self-sustaining populations within Alberta. Development of these plans reflects Alberta's commitment to the *Accord for the Protection of Species at Risk in Canada*, the *National Framework for the Conservation of Species at Risk*, and requirements established under Alberta's *Wildlife Act*.

Alberta recovery plans are developed under the supervision of the Fish and Wildlife Division, Alberta Sustainable Resource Development. These recovery plans are prepared by recovery teams composed of a variety of stakeholders, including government agencies, conservation organizations, industry, landowners, resource users, universities and others. Membership is by invitation from the Director of Wildlife Management in the Department of Sustainable Resource Development and includes representation from the diversity of interests unique to each species and circumstance.

Recovery plans comprise two main components: a recovery strategy and an action plan. The strategy includes a comprehensive compilation of both short- and long-term goals and objectives required for recovery of the particular *Threatened* or *Endangered* species. The action plan identifies specific actions and timelines necessary to achieve the recovery goals. The recovery strategy and action plan may be developed either concurrently or sequentially, depending on the species and issues involved. Conservation and management of these species continues during preparation of the recovery plan.

Once a draft recovery plan is completed, it is forwarded to the Endangered Species Conservation Committee (ESCC) for review. The ESCC then forwards recommendations and advice on implementation and recovery actions to the Minister responsible for wildlife. Interested members of the public are also provided with an opportunity to comment on the plan during the final stage of plan completion. Plans accepted and approved for implementation by the Minister are published as

part of the recovery plan report series. Approved plans are a summary of the department's commitment to coordinate and implement conservation actions necessary to restore and maintain these species.

Recovery plans are "living" documents and are revised by the recovery team as conditions change or circumstances warrant. Each approved plan includes a process for plan review and for monitoring the results of implementation. Implementation will be subject to the identification of sufficient resources, from within and outside government, to do the job that is required, while respecting the overall program priorities of the Alberta Government.

During 2001-2002, recovery planning and team formation were initiated for four species: burrowing owl, peregrine falcon, piping plover and western blue flag. Preliminary work was undertaken for the formation of recovery teams for three other species: woodland caribou, trumpeter swan and Ord's kangaroo rat. The framework for an Alberta-focused approach for sage-grouse recovery planning was also developed. Recovery-related actions continued for all of these species, concurrent with recovery planning. On-the-ground initiatives varied from species to species, from ongoing population monitoring to development and implementation of range management plans for grazing leases in select areas.

ALBERTA BURROWING OWL RECOVERY PLANNING

Recovery Team Leader: **Arlen Todd**

Background and Activities

The burrowing owl was first listed as *Threatened* under Alberta's *Wildlife Act* in 1987. This listing was upheld in 2000 following a review of the species' status. Nationally, the burrowing owl is listed as *Endangered* by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2001). The Alberta Burrowing Owl Recovery Team was formally established in June 2001 and the first meeting was held on 13 July 2001. The team meets at regular intervals, with a total of seven meetings in the first 11 months.

The team presently has 16 voting members, who represent the following diverse organizations: Alberta Sustainable Resource Development—Fish and Wildlife Division, Alberta Sustainable Resource Development—Public Lands Division, Canadian Wildlife Service, Grasslands Naturalists, Alberta Fish and Game Association—Operation Grassland Community, Eastern Irrigation District, Special Areas Board, Alberta Beef Producers, PanCanadian Energy Corporation, Conoco Canada-Pipelines, Siksika Nation, Nature Conservancy of Canada and one unaffiliated member (a technical expert on burrowing owls). The team has expanded to ensure adequate representation, particularly from the oil and gas sector. The team also works with additional organizations as required, which currently

include the University of Alberta, Canadian Association of Petroleum Producers, Fording Coal Ltd., and Canadian Forces Base Suffield.

Initial meetings were devoted largely to developing terms of reference, a policy statement and guiding principles, education on burrowing owls, and information exchange in a broader sense. The team recognizes that landholders and resource users have vital roles to play in successful recovery efforts for burrowing owls, and is committed to establishing a recovery planning process that is inclusive and effective. Accelerated planning to complete the Alberta recovery strategy is underway in 2002, with the expectation of submitting a draft recovery plan for review by late in the year.

**For more
information contact:**

Arlen Todd (see page 7).



burrowing owl

GREATER SAGE-GROUSE RECOVERY PLANNING

Program Supervisor: Dale Eslinger

Background and Activities

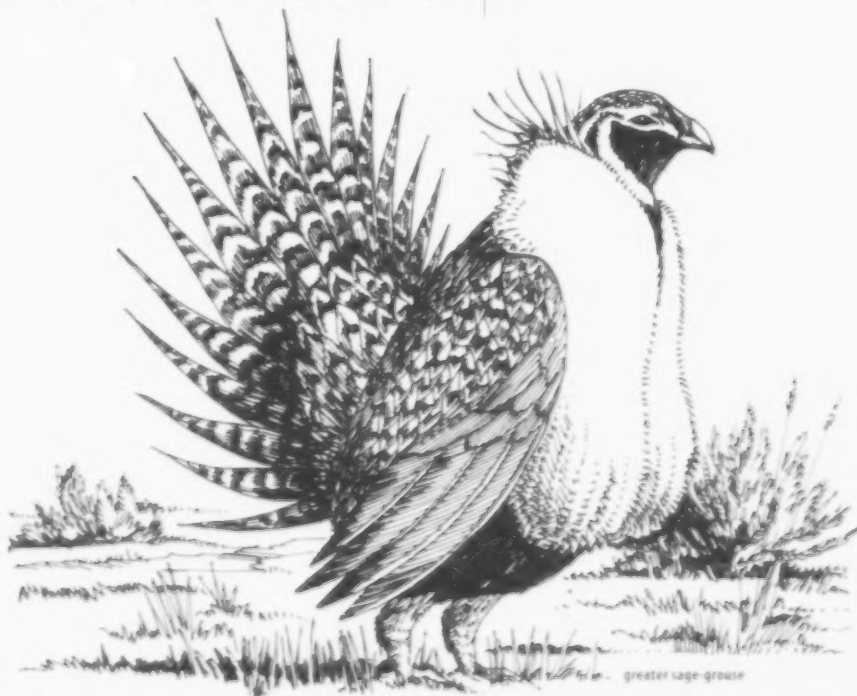
The greater sage-grouse has experienced substantial declines in population size and distribution throughout much of its range across the prairies, including Alberta and Saskatchewan. In 2000, the Committee on the Status of Endangered Wildlife in Canada reassessed the status of the prairie population of sage-grouse and upheld its 1998 designation of *Endangered* (COSEWIC 2001). During the same period, Alberta assessed the provincial status of the species and designated it as *Endangered* under Alberta's *Wildlife Act*.

The Sage Grouse Recovery Team was formed in November 1997 to initiate recovery planning for the prairie population of sage-grouse. The interprovincial team is composed of a broad membership: Saskatchewan Environment and Resource Management; Alberta Sustainable Resource Development—Fish and Wildlife Division; Prairie Farm Rehabilitation Administration; Grasslands Naturalists; Grasslands National Park—Parks Canada; Saskatchewan Wildlife Federation; Alberta Cattle Commission; PanCanadian Energy Corporation; Nature Saskatchewan; Alberta Conservation Association; Alberta Agriculture, Food and Rural Development; Saskatchewan Stock Growers Association; Alberta Fish and Game Association; and Saskatchewan Agriculture and Food. The team followed Recovery of Nationally Endangered Wildlife (RENEW) guidelines in developing the recovery plan. Alberta endorsed

the resultant *Canadian Sage Grouse Recovery Strategy* in September 2001.

The recovery strategy consists of three main components. It lists the primary recovery goal and related objectives, provides an overview of sage-grouse ecology and status, and outlines key recovery strategies. Development of the recovery strategy highlighted a number of deficiencies in the process related to roles and responsibilities, team membership, coordination and a clear decision-making framework. However, by recognizing and addressing these shortfalls, Alberta is now poised to develop a recovery action plan with the creation of the Sage Grouse Management Committee. This committee will be composed of Fish and Wildlife Division staff and will be responsible for all aspects of management of sage-grouse in Alberta. One of the first tasks for the committee will be the formation of a Sage Grouse Recovery Action Team, which will include representatives from government as well as key stakeholders that have a vested interest in sage-grouse recovery. Once formed, this group will be responsible for developing a recovery action plan, which will detail actions and planned actions being directed towards sage-grouse recovery in Alberta. This process will be managed collaboratively at the local level, and will focus on consensus-based decision-making and adaptive management.

The *Canadian Sage Grouse Recovery Strategy* is available on the Alberta Species at Risk Program website: <http://www3.gov.ab.ca/srd/fw/riskspecies/>.



For more
information contact:

Dale Eslinger (Dale.Eslinger@gov.ab.ca)

ALBERTA PEREGRINE FALCON RECOVERY PLANNING

Recovery Team Leader: **Gordon Court**

Background and Activities

Nationally, the peregrine falcon is listed as *Threatened* by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2001). In 1999, its status in Alberta was downgraded from *Endangered* to *Threatened* in recognition of the increasing population size in the province and declining organochlorine pesticide residues in peregrines and their prey. Along with this new listing, recovery and conservation actions in the province were formally initiated. These actions included the formation of a multi-stakeholder recovery team and creation of a recovery plan.

The Minister of Sustainable Resource Development initiated the establishment of the Alberta Peregrine Falcon Recovery Team in May 2001. The team's primary responsibility is to facilitate and coordinate the conservation and recovery of this species in Alberta. It provides expert advice to the Minister on all matters relating to the management of this falcon in Alberta. The team is also responsible for writing, updating and guiding the implementation of the provincial recovery plan, and for providing input to the national Peregrine Recovery Team on matters relating to peregrine falcon management in Alberta.

Affected stakeholders were invited to participate on the recovery team, and team membership consists of representatives from Alberta Conservation Association, Alberta Sustainable Resource Development—Fish and Wildlife Division, Canadian Wildlife Service, Parks Canada—Wood Buffalo National Park and the Federation of Alberta Naturalists.

In consideration of budget constraints and the distance between residences of members on the team, recovery team meetings have been conducted by teleconference. The first took place in August 2001. During this meeting, background information on the Alberta Species at Risk Program was presented, and the roles and responsibilities of the recovery team and the structure and content of the recovery plan were discussed. Plans were made for a memorandum of understanding between Alberta Sustainable Resource Development, Parks Canada and the Canadian Wildlife Service to expedite monitoring initiatives in northeastern Alberta. The second teleconference was scheduled for April 2002. Activities and issues to be discussed included a review of the draft memorandum of agreement for northeastern Alberta, Alberta Conservation Association resources and commitment to peregrine monitoring province-wide, and discussion of logistics of the 2002 peregrine monitoring initiative in northeastern Alberta.

The first draft of the *Alberta Peregrine Falcon Recovery Plan* will be completed by September 2002. The plan is an action-oriented document; however, it recognizes the realities of soliciting or committing Species at Risk funds toward a species regarded as "in recovery", particularly one that has been the focus of management activities for more than three decades. The plan outlines a strategy to document recovery and a monitoring plan that should identify whether conservation actions are still required to assist this species in Alberta.

The plan will be divided into three main sections:

- A background section on the breeding biology, status, population distribution and population trends of peregrine falcons in Alberta. This section also introduces and discusses factors that caused populations to decline in Alberta, and those that may limit growth in the future.
- A section on recovery in which the ministerial action statement is introduced along with the recovery team and its guiding principles. The recovery goals and strategies for monitoring are also identified.
- An estimate of the cost and implementation schedule for recovery and monitoring actions. A variety of agencies will be invited to participate in the funding and implementation of recovery initiatives. Sourcing of funds is currently underway.

Following the completion of each year's activities, plan accomplishments will be assessed and future recovery direction and initiatives will be re-evaluated as deemed necessary by the recovery team.

For more information contact:

Gordon Court (see page 7).

ALBERTA PIPING PLOVER RECOVERY PLANNING

Recovery Team Leader: **Dave Prescott**

Background and Activities

The piping plover is listed as *Endangered* in Canada by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2001). In February 2000, its status in Alberta was uplisted from *Threatened* to *Endangered* because of low population size (<250), threats to the species' habitat, and the inability of existing management to increase population levels. Along with this listing, the Minister responsible for wildlife issued a Conservation Action Statement that formally initiated recovery actions in the province. This included the formation of a multi-stakeholder recovery team and creation of a recovery plan within 24 months of listing. The action statement also stated that loss of habitat and nests is unacceptable, and that management actions should ensure the protection of breeding sites through habitat conservation initiatives.

The Minister of Sustainable Resource Development initiated the establishment of the Alberta Piping Plover Recovery Team in April 2001. The team's primary responsibility is to facilitate and coordinate the conservation and recovery of the piping plover in Alberta. It provides expert advice to the Minister on all matters relating to the management of piping plovers in Alberta. The team is also responsible for writing, updating and guiding the implementation of the provincial recovery plan, and for providing input to the national Prairie Piping Plover Recovery Team on matters relating to piping plover management in Alberta.

Because of the multi-stakeholder nature of recovery issues, team membership will remain dynamic and strive for the best representation of all affected parties. The team currently consists of representatives from Alberta Beef Producers, Alberta Conservation Association, Alberta Sustainable Resource Development—Fish and Wildlife Division, Alberta Sustainable Resource Development—Public Lands Division, Canadian Wildlife Service, Ducks Unlimited Canada—Alberta North American Waterfowl Management Plan, Nature Conservancy of Canada and the Special Areas Board.

Two recovery team meetings were held in 2001-2002. The first took place on 9 July 2001. During this meeting, background information on piping plovers and the Alberta Species at Risk Program was distributed, and discussion revolved primarily around the roles and responsibilities of the recovery team as well as the structure and content of the recovery plan. The second meeting was held on 30 October 2001. Activities and issues discussed included a review of the

2001 International Piping Plover Census results in Alberta and results from the Piping Plover Predator Exclusion Project in 2001, a review of the draft recovery plan to date, and a look at the proposed lake management plan outline.

In late January 2002, the *Alberta Piping Plover Recovery Plan 2002-2004* was completed by the team, and was submitted for review and approval by the Minister. The plan is an action-oriented document, with emphasis on cooperative, mutually beneficial solutions for landowners and other stakeholders; tools resulting in the most immediate benefit to piping plovers; and the concept of adaptive management.

The plan is divided into four main sections:

- A background section on the breeding biology, status, population distribution and population trends of piping plovers in Alberta. This section also introduces and discusses factors limiting populations in Alberta.
- A recovery section in which the ministerial action statement is introduced along with the recovery team and its guiding principles. The recovery goals and six strategies for recovery are also identified: 1) plan management and administration; 2) habitat protection and management; 3) productivity enhancement; 4) information and education; 5) research; and 6) funding needs and sources.
- An outline of specific recovery actions for each of the six strategic areas. A major element of the recovery effort involves the preparation of management plans for at least 25 of the key breeding lakes in the province. These lake management plans will include all available information on piping plover populations and the location of breeding habitats on each lake, and will detail specific recovery actions to be implemented at each site.
- A section dealing with the cost and implementation schedule of recovery actions. A variety of agencies will be invited to participate in the funding and implementation of recovery initiatives. Sourcing of funds is currently underway.

Following the completion of each year's activities, plan accomplishments will be assessed and future recovery direction and initiatives will be re-evaluated as deemed necessary by the recovery team. At the time of printing this document, the *Alberta Piping Plover Recovery Plan, 2002-2004* had received Ministerial approval.

**For more
information contact:**

Dave Prescott (see page 71)

WESTERN BLUE FLAG RECOVERY PLANNING

Recovery Team Leader: **Richard Quinlan**

Background and Activities

In September 2001, Alberta's Minister of Sustainable Resource Development approved western blue flag for listing as a *Threatened* species under Alberta's *Wildlife Act*. Earlier, in May 2000, the Committee on the Status of Endangered Wildlife in Canada reviewed the status of western blue flag in Canada and upheld its 1990 classification of *Threatened* (COSEWIC 2001). Both of these actions stimulated the initiation of the recovery process for western blue flag.

The Canada Western Blue Flag Maintenance/Recovery Team was formed in September 2001 to prepare a recovery plan for this species. The team is composed of resource managers and public stakeholders. Members of the team include five ranchers from the Cardston area, five representatives of stakeholders groups (Alberta Cattle Commission, Alberta Conservation Association, Alberta Native Plant Council, Lethbridge Naturalists Society and Society for Range Management), and two representatives from government departments (Alberta Sustainable Resource Development—Fish and Wildlife Division and Alberta Community Development—Parks and Protected Areas). The team members were selected to represent a broad range of interests in both conservation of the species and the potential implications of management on landowners.

The team met five times during 2001-2002, and each member of the team contributed valuable discussion and insight into what was needed for the management of western blue flag. As Alberta is the sole jurisdiction responsible for the management of western blue flag, the recovery plan was developed to satisfy both provincial and national recovery plan requirements. A draft plan was presented to the Endangered Species Conservation Committee (ESCC) in February 2002 for review. The draft plan and comments from the ESCC were forwarded to the Minister for approval and implementation in March 2002.

The *Maintenance and Recovery Plan for Western Blue Flag (*Iris missouriensis*) in Canada* consists of two sections:

- A maintenance/recovery strategy that outlines principles, goals and objectives, and describes current status, limiting factors and general recommendations for management.
- An action plan that identifies specific tasks and provides a schedule of when the activities will be done and by whom.

The primary goal of the plan is to ensure long-term maintenance of the naturally occurring population of western blue flag in Canada. The plan is also designed to reflect the principles of cooperation and voluntary participation, stakeholder involvement in management decisions, protection of a *Threatened* species in a sustainable ranching landscape, and landscape management to benefit not just western blue flag but many other species that occur in native grasslands.

The plan includes an update of population size and descriptions of the 11 sites where the species is known to occur, as well as a schedule for continued inventory efforts and monitoring. Management recommendations are provided, which address the needs of the species in a manner considered practical for the landowners that provide habitat for the Canadian population. Recommendations for Alberta's *Wildlife Regulation* pertaining to western blue flag are included, as well as an update suitable to allow a review of management status. Information is provided on individual range management plans and ranch improvements available to cooperating landowners. Important research needs are identified.

As part of the public consultation process, an open house is planned for late May 2002. A meeting will be held annually, beginning in April 2003, to review recovery actions achieved and any changes to the plan that are needed. The plan has a designated life of five years, after which it will be reviewed and revised by the maintenance/recovery team.

At the time of printing this document, the *Maintenance and Recovery Plan for Western Blue Flag (*Iris missouriensis*) in Canada* had received Ministerial approval. The plan is available on the Alberta Species at Risk Program website: <http://www3.gov.ab.ca/srd/fw/riskspecies/>.

**For more
information contact:**

Richard Quinlan (see page 7).

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<http://www3.gov.ab.ca/srd/fw/>

Alberta Species at Risk Program

<http://www3.gov.ab.ca/srd/fw/riskspecies/>

Alberta Conservation Association (ACA)

<http://www.ab-conservation.com/index2.asp>

Alberta Endangered Species Conservation Committee (ESCC)

<http://www3.gov.ab.ca/srd/fw/escc/index.html>

Alberta Natural Heritage Information Centre (ANHIC)

<http://www.cd.gov.ab.ca/preserving/parks/anhic/>

Map of the Natural Regions and Subregions of Alberta

<http://www.cd.gov.ab.ca/preserving/parks/anhic/abnatreg.asp>

Wild Species 2000: The general status of species in Canada

<http://www.wildspecies.ca/>

Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

<http://www.cosewic.gc.ca/>

Recovery of Nationally Endangered Wildlife (RENEW)

<http://www.speciesatrisk.gc.ca/sar/efforts/index.htm>

The World Conservation Union (IUCN) Red List Categories

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definition of status ranks

Status of Alberta Wild Species Ranks (after *The General Status of Alberta Wild Species 2000* [Alberta Sustainable Resource Development 2001])

2000 Rank	1996 Rank	Definitions
At Risk	Red	Any species known to be at risk after formal detailed status assessment and designation as Endangered or Threatened in Alberta.
May Be At Risk	Blue	Any species that may be at risk of extinction or extirpation, and is therefore a candidate for detailed risk assessment.
Sensitive	Yellow	Any species that is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk.
Secure	Green	A species that is not at risk, may be at risk or sensitive.
Undetermined	Status Undetermined	Any species for which insufficient information, knowledge or data is available to reliably evaluate its general status.
Not Assessed	n/a	Any species whose general status has not been evaluated.
Exotic/Alien	n/a	Any species that has been introduced as a result of human activities.
Extirpated/Extinct	n/a	Any species no longer thought to be present in Alberta (extirpated) or no longer believed to be present anywhere in the world (extinct).
Accidental/Vagrant	n/a	Any species occurring infrequently and unpredictably in Alberta; i.e., outside its usual range.

Alberta's Wildlife Act¹

Endangered Species	A species that is facing imminent extirpation or extinction if limiting factors are not reversed.
Threatened Species	A species likely to become endangered if limiting factors are not reversed.
Species of Special Concern	A species with characteristics that make it particularly sensitive to human activities or natural events.

¹ Draft wording as proposed for the Wildlife Amendment Act

Committee on the Status of Endangered Wildlife in Canada

(after http://www.cosewic.gc.ca/eng/sct0/terms_e.htm)

Extinct	A species that no longer exists.
Extirpated	A species that no longer exists in the wild in Canada, but occurs elsewhere.
Endangered	A species facing imminent extirpation or extinction.
Threatened	A species that is likely to become endangered if limiting factors are not reversed.
Special Concern (Vulnerable)	A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.
Not at Risk	A species that has been evaluated and found to be not at risk.
Data Deficient	A species for which there is insufficient scientific information to support status designation.

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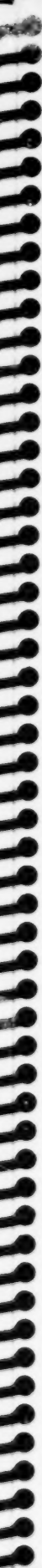
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